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Sir In answer to your request, and
in justice to you and indeed to the
Public, I hereby attest that, in several
cases of Deformity from curvature
of the spine, the Patients have,
even in the short time you have
resided here, received relief
and benefit from the Application
of your Machinery, and it appears
to me, that there are just grounds
for believing, that they may derive
still more material Advantages,
from continuing to wear it.

I am Sir

Edinburgh

Yours obed^t Serv^t

Oct. 7. 1789.

Alex^r. Monroe

For Mr Jones

I have had many opportunities of seeing good effects from the application of Dr Jones's Stays, to machinery, in cases of curvatures of the Back bone; they will not however be proper in all cases, and even in those for which they are particularly adapted great attention is necessary in the mode of using them. I consider Mr Jones to be a

very good judge both of the cases in which they will be proper, and the mode of applying them, and have reason to believe that for his own sake — He would not choose to apply them, unless he had considerable hopes of their proving useful

Dearest Sir
Rough 7th 1788—

John Hunter



AN
ESSAY
ON
CROOKEDNESS,
OR
DISTORTIONS OF THE SPINE;

SHEWING
The Insufficiency of a Variety of Modes made Use of
for Relief in these Cases;

AND
Proposing Methods, Easy, Safe, and more Effectual for the Com-
pletion of their Cures;

WITH
SOME HINTS
For the Prevention of these Affections, and their Disagreeable,
Painful, and Dangerous Consequences.

ILLUSTRATED WITH
SEVERAL COPPER PLATES,
TAKEN FROM DISTORTED SUBJECTS.

BY
PHILIP JONES,
OF CHARLOTTE-STREET, BEDFORD-SQUARE.

'Tis better far to die, than crawl thro' life,
Diseases prey—deformed—and wretched.

ANONYMOUS.

LONDON:

Printed for the Author by S. GOSNELL, *Roll's Buildings, Fetter
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T O

J O H N H U N T E R, Esq.

SURGEON TO THE KING; LECTURER IN SUR-
GERY; ONE OF THE SURGEONS OF ST.
GEORGE'S HOSPITAL, AND F.R.S. &c.

S I R,

WHERE men conscious to themselves that they are in possession of any invention, which promises to be useful to mankind—where they have had incontestable proofs from the experience of many years, that it will be productive of essential benefit to their fellow creatures, it is their duty to make such invention as public as possible; not by the

ostentatious parade of high-sounding words, fashioned by self-consequence, and pregnant with fulsome self-adulation, but by plain facts fairly recited, and supported by the solid arguments of sound and modest reason. It is on these principles I presume to launch myself forward into public notice; prepared to stand the trial of a candid examination; building my pretensions to public favor only on the firm foundation of faithful experiment. Thus situated, to whom, Sir, could I apply for patronage, but to one who has spent his life, unwearied, in medical pursuits; who has enriched the science, in his own departments, with so many useful discoveries; who, with a laudable fortitude, dare contradict long-received opinions, not founded on the basis of truth; and who is blessed with such

in-

ingenuouſneſs and philanthropy, that he cannot reſuſe his aid to induſtry and ingenuity, when he ſees them ſtruggling in the vale of obſcurity. Theſe, Sir, are ſufficient incentives to an honeſt mind ; but I have ſtill a ſtronger ; the tribute of gratitude from me is due ; for, approving my plan, you have not ſordidly forbore the confeſſion ; but where you have conceived it might be uſeful, have ſupplied me with opportunities of repeatedly proving the juſtneſs of your conception : and by a conduct ſo candid and exemplary, have baniſhed infirmity from the body, and dejection from the ſpirits of many, who now enjoying the delicious ſweets of blooming health, in the miſt of their felicity, cannot forget the author : nor ſhall I, ever, the various proofs you have given me of your con-

descension. The grateful heart overflows with joy at the reflection of the benefits it has received, thirsts for, and snatches at every occasion to acknowledge its obligations—irresistible is its power—I feel its force—and flatter myself, you will attribute to these impulses, the pleasure which I now take in humbly laying the following sheets before you, and thus publicly subscribing myself, with all due deference, regard, and gratitude,

S I R,

Your most obliged

and devoted servant,

P. JONES.

P R E-

P R E F A C E.

IT may perhaps be thought necessary, that I, who follow the business of stay-making, should give some account how I first thought of attempting to cure a disease, which had so long puzzled the most eminent men of the faculty; and by what means I became qualified to ensure success in many cases; lest the world should consider my pretensions founded more on mere presumption, than any knowledge which might authorize me to pursue a business so apparently incompatible with my avocation. But however this idea may have influenced the minds of many, to think unfavourable of me
with

with respect to this business, I must confess, that it was that very avocation, which supplied me with the opportunity of seeing the human frame variously distorted; led my invention to different kinds of contrivances to hide the defects of form from the observing eye, and consider, as well as I could, the cause from whence it originated. Long did I wander in the dark, till one circumstance began to clear away my ignorance, and convince me that distortions deduced their origin from incurvations of the spine; for on attending a young delicate weakly lady, who was deformed, in the presence of a surgeon, he elevated the body by the head, and during that state of elevation, I found her form became almost perfectly straight. I was then struck with the thought, that if she could be kept continually in this position, till she grew older, and consequently stronger, every obstacle would be removed. Vari-

ous

ous were the inventions I made use of, which often were attended with success; yet still not satisfied with being defective in anatomical knowledge, as I thought a thorough information, with that part of the human machine, would assist me in forming my ideas more perfectly with respect to the nature of the disease, and enable me to improve the plan I had already adopted; I attended Dr. William Hunter's, and other anatomical lectures; by which means, becoming conversant with the various parts, particularly those of the spine; knowing its structure, action, and dependencies; viewing it constantly in a state of health, and oftentimes of disease: besides becoming acquainted with the modes made use of in the animal œconomy for the formation of bone; and to knowledge thus acquired, adding practical observation, I fell upon the method which is the subject of the subsequent work; and of which long
ex-

experience has confirmed the utility : but how far it may be consonant to right reason, how fully it is supported by experience, I must leave to the determination of those, who will honor me with the perusal of my work ; and condescend, on minute investigation, to let, in their deductions, candour be the pilot.

A N
E S S A Y
O N
D I S T O R T I O N, &c.

AMONGST the number of diseases which afflict the human body, there are few attended with more disagreeable consequences, and which appear to have been more neglected, than that which is the subject of the following sheets. Why it has been so much disregarded is not easy to conjecture, unless from the unsuccessful attempts which have been repeatedly made by many, having occasioned it to be considered as incurable; and perhaps from the contempt of modes, which, because they were simple and merely mechanical, have been thought inadequate to produce the desired effects. However, we shall in the course of the subsequent work

prove, by the most uncontrovertible testimonies, that cures have been performed in cases apparently the most desperate. The disease we advert to is, **THE DISTORTION OF THE SPINE**; which not only gives a most unpleasing appearance to the human machine, but is productive of a variety of complaints, painful in their progress, often embittering life, and fatal in their consequences, taking off numbers at a very early period. These facts are so well established, that we need not make use of any argument in proof. Disagreeable and unhappy as are the effects deducing their origin from this cause, is it not rather astonishing to see parents solicitous in arranging the teeth of their children in regular order; hunting out, what is termed, the most fashionable dentist; and neglecting the form of the machine; suffering it to become twisted and in various ways distorted, by which means the healthful efforts of nature are retarded, perverted, or destroyed; and those particular operations which should be conducted properly for the well-being of the animal, so irregularly carried on, that disease in various forms becomes the constant associate of these miserable beings.

But before we enter fully on our subject, as this work may fall into the hands of many who
have

have not made anatomical inquiries any part of their pursuit, we shall say something briefly on ossification, and nature of the spine; as on a thorough knowledge of this last must our success in cases we undertake to relieve, be in a great measure founded. “Bones,” says Dr. MONRO, “however solid and compact they are “in adults, were once cartilages, membranes, “nay a mere jelly;” *and indeed it is universally allowed, that in their formation they are made of an earthy, deposited in a gelatinous matter from the exhaling arteries.* “With regard to their soft “primitive state, there needs no other proof, “than repeated observations of embryos when “dissected. By degrees they become solid, then “assume the nature of gristles, and at last ossify; “which is brought about partly by the bones “being more than other parts exposed to the “strong pressure of the great weights they support, to the violent contraction of the muscles fixed to them, and to the force of the “parts they contain, which endeavour to make “way for their further growth. By all this “pressing force the solid fibres and vessels of the “bones are thrust closer, and such particles of “the fluids conveyed in these vessels as are fit to “be united to the fibres, are sooner and more “firmly incorporated with them, while the re-

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“maining

“ remaining fluids are forcibly driven out by the
 “ veins to be mixed with the mass of blood.”

And “ It is also probable that ossification de-
 “ pends on the vessels of the bones being so dis-
 “ posed and of such diameters, as to separate a
 “ liquor, which may easily, when deprived of
 “ its thinner parts, turn into a bony sub-
 “ stance.

“ That the ossifying of bones does depend
 “ much on pressure, seems to be evinced from
 “ the frequent examples we meet with of other
 “ parts turning bony, when long exposed to
 “ the compressing force of the surrounding parts;
 “ or when they are subjected to the like circum-
 “ stances by their own frequent and violent con-
 “ traction; witness the bones frequently found
 “ near the base of the heart in some old men,
 “ and in several other creatures. The cartilages
 “ of the larynx are generally ossified in adults.
 “ In beasts of burden, the cartilages between the
 “ vertebræ of the back and loins very often
 “ change into complete bones, and, being inti-
 “ mately united with the vertebræ, the whole ap-
 “ pears one continued bone. And the ossification
 “ may also depend in a great measure on the other
 “ cause above recited, seems plain from the ob-
 “ servation

“ fervation of the callous matter feparated after
 “ fractures and ulcers, where part of the bone is
 “ taken out ; for in thefe cafes this liquor har-
 “ dens and often cements the two extremities
 “ of a bone though at a good diftance from each
 “ other.”

From all which it appears clear, that in order to produce offification, and render the bones properly compact and folid, there are three requifites neceffary in the conftitution, viz. a fufficient quantity of offific fluid in the habit, a peculiar difpofition of the veffels of the bones and of their diameters, and ftrong mufcular and vafcular action.

Dr. HUNTER, who adopted the opinion of Dr. NESBIT, confiders the bones as a new fubftance produced, which fhoots from different beds ; fome from membranes, as the bones of the head ; fome from cartilages, as the oblong bones ; and that they bear the fame form in the ftamina, and when adult. Uniform bones beginning in the middle to offify, and fhooting towards the extremities by one offification ; irregular bones having many to haften the completion, as the bones of the cranium, &c. and as they increafe in offification, they lofe their cartilaginous and

membranous substance. Here then have we the idea of this new or bony substance shooting like salts; and by the union of the particles, forming fibres, which conjoined occupy such space, and put on such appearances, as are allotted them by the Divine Disposer of all things, properly adapted to their particular uses by the plastic hand of Nature.

In one or other of these ways are the whole bones of the machine formed; amongst the number of which, it only belongs to us to advert to the SPINE or VERTEBRÆ.

These are divided into true and false. The true vertebræ are *twenty-four in number*, viz. *seven* in the neck, *twelve* of the back, and *five* of the loins. Each vertebra is composed of its body and processes. *The body* is the thick anterior part, which is convex before and concave behind, and most horizontal and plain both above and below. The surfaces of two contiguous vertebræ are covered with a *cartilage*; there is a *ligament* composed of concentric curved fibres, which is firmly attached to the horizontal surface of the vertebræ, besides which there is a *strong ligament*, which lies between the edges of the vertebræ, whose fibres decussate each other in the form of an X. From each

each side of the body of each vertebra, a *bony ridge* is produced backwards and to a side; from the posterior extremity of which, *one slanting process* arises, and *another* descends; the smooth side of each of these four processes, which are called the *oblique*, is covered with a cartilage; and the two inferior oblique processes of each vertebra are articulated with the two superior oblique processes of the vertebra below. From between the superior and inferior oblique processes of each side the vertebra is stretched out laterally, and forms a process called *transverse*. From the posterior root of the two oblique, and of the transverse process on each side, a *broad oblique bony plate* is extended backwards; where these meet, the *spinal* process rises and stands out backwards. *These seven processes* form the posterior parts of the vertebræ, and are hollow at their anterior middle part, which cavity, joined with that on the back part of the bodies, make a *great canal* which answers to another in the vertebra above and below, for the *medulla spinalis*. There are *two semicircular notches* belonging to each vertebra, which coincide with two similar notches in the adjoining vertebra; through these foramina, which are placed immediately behind the body of the vertebra, the *spinal nerves* pass out.

The CERVICAL VERTEBRÆ are concave above and convex below; they are flat forward and behind. Their *spinal processes* are bifid, to allow a more convenient insertion for muscles. The *transverse processes* are short and generally bifid, the root having a hole for the secure passage of the vertebral artery and vein. The *oblique processes* are quite horizontal. The rotatory motions of the head are not entirely performed by the first and second vertebræ, as is mostly imagined, but they are greatly assisted by the rest of the spine; for the rotation of any two vertebræ is inconsiderable; yet it is not so when we consider them altogether; besides, if this rotation was betwixt the first and second only, as we are capable of rotating the head a quarter of a circle, so great a degree of motion would have destroyed the spinal marrow of that part.

The DORSAL VERTEBRÆ are of a middle size betwixt the cervical and lumbal, and are flattened laterally by the pressure of the ribs, which are inserted into small cavities in the sides of these vertebræ. The ribs are articulated betwixt two vertebræ, except in the *first, eleventh, and twelfth*, where the cavity for their reception is entirely formed in the same vertebræ,

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The LUMBAR VERTEBRÆ are larger than the others; the *cartilages* between them are thicker, and the *spinal* and *oblique* processes stronger; which is necessary, as they have a greater quantity of motion, and are the most exposed in injuries offered to the spine. The FALSE VERTEBRÆ are divided into two bones, the *os sacrum* and *os coccygis*; these are distinguished from the former by this epithet of false, because though each bone resembles the true vertebræ in figure, yet none of them partake of their use of serving in the motion of the trunk of the body, all of them being intimately united except at one part, where there is a moveable joint; whence the common division of these false vertebræ into two bones, *os sacrum* and *os coccygis*.

From this account of ossification and the spine, with its cartilages and connecting ligaments, agreeable to the opinion of Dr. Monro, and other anatomists, we can easily deduce an account of all the different curvatures of the spine which usually occur: for if one or more vertebræ are of unequal thickness in opposite sides, the spine must be reclined over to the thinner side; which now sustaining the greatest share of the weight, must still be more compressed, consequently hindered from extending itself in proportion to the other side,
which

which being too much freed of its burden, has liberty to enjoy a luxurious growth. The causes on which such an equality of thickness in different sides of the vertebræ depend, may vary; for either it may be owing to an over-distension of the vessels of one side, and from thence a preter-natural increase of the thickness of that part; or which more commonly is the case, it may proceed from an obstruction of the vessels by which the application of proper nourishment to the bony substance is hindered, whether that obstruction depends on the faulty disposition of the vessels, or fluids; or if it is produced by an unequal mechanical pressure, occasioned by a paralytic weakness of the muscles and ligaments, or by a spasmodic over-action of the muscles on any side of the spine, or by a person's continuing long, or putting themselves frequently into any particular posture declining from that which is erect. In all these cases, one common effect will follow, viz. the vertebræ turn thick on the side where the vessels are free, and remain thin on the other side, where the vessels are straitened, or obstructed. Whenever any morbid curvature is thus made, almost necessarily a second turn, but in an opposite direction to the former, must be formed; both because the muscles on the convex side of the spine being stretched, must have a stronger natural contraction

tion to draw the parts to which their extremities are fixed, and that the patient will make efforts to keep the center of gravity of his body perpendicular to its base, that the muscles may be relieved from a constant violent contractile state, which always creates uneasiness and pain.

When once we understand how these crooked spines are produced, there will be little difficulty in forming a just prognosis of our patient's disease, and a proper method of cure may be contrived, which must vary as to internal medicines, according to the different causes on which the disease depends; but ONE GENERAL INDICATION must be pursued, which is, to counteract the bending force by diminishing the compression on the concave side of the curvature. The manner of executing which, in particular cases, must be very different, and requires a very particular examination of the circumstances both of the disease and patient. In many such cases some simple directions as to postures in which the patient's body should be kept, have been of infinite advantage.

We have here laid down the general doctrine relative to this complaint, supported by the opinion of the sagacious and experienced Dr. Monro,
from

from whence the proximate cause may be discovered, which may be produced by various others more remote; but as our intention is merely to confine ourselves to mechanical means, either in curing, or assisting in the cure of this complaint, we shall only attempt to prove the absolute necessity there is for such applications in all cases, and shew by a number, authenticated by men of character and eminence, the great benefits that have been derived from them.

But in order to prove this more clearly, we must advert to the immediate cause which, on examination, we find to arise from whatever can occasion the spine to be fixed in a direction contrary to what is natural, and that is nearly perpendicular. Now this deviation from the natural position arises from some defect in the connecting ligaments of the vertebræ, or in the vertebræ themselves; for the former either being partially relaxed, or thickened, or the latter becoming thicker in one part than another in some of the vertebræ, or the muscles belonging to them being spasmodically affected, and possessing too strong local action, overbalancing the contractile power of antagonist muscles, will give rise to such a curvature of the spine as constitutes distortion. Some of which may be owing to bad nursing, fixing continually

usually the body in one posture, to a softness of the bones, called by authors *MOLLITIES OSSIUM*, to a caries of some of the vertebræ, to scrophulæ, rickets, long continued illness, or, in fine, to whatever will debilitate the system too greatly, especially in the early periods of life, before the vertebræ have become sufficiently strong to bear the weight of the superincumbent parts, from not having received their due proportion of ossific matter, or by having part of that matter wasted, or rendered so fluxile, that part of it is absorbed again into the system, and the vertebræ left in too soft a state; or to the muscles acting in some parts too freely, by which means the spine is bent in some particular direction, and a greater pressure being formed on one part than the other, the cartilaginous substance is rendered thicker in one part than another, and consequently the ossific matter will be deposited more freely on that part where there is the greater freedom from pressure, and occasion the vertebræ to be so formed, that one side will be more elevated than the other, and of course a curvature of the spine will be occasioned, and remain in that form, if the affection is not remedied before the ligaments and bone have arrived at their utmost state of perfection.

Now

Now when the spine is relaxed and rendered very weak from any cause, the patient cannot support the head and parts above where the curvature takes place with sufficient ease, but seeks relief by leaning on tables, chairs, &c. and stands generally on one leg, which increases the twist of the spine, so that this of course takes its shape according to the position the body is put into, and that will be various, occasioned, as it is thought, either from inattention or indolence ; but which, in fact, arises from a solicitude in finding out the most easy posture, which when found, becomes the favourite one, and is most frequently used : and this distortion will be in a greater or less degree in proportion to the weakness of the frame, the softness of the bones, and the indulgence in particular postures ; and continue permanent, without relief can be obtained before they arrive at the age of twenty ; for it is only within this period we can hope to remedy the inconvenience. Here though is given the utmost limits, for it is generally found that cures are extremely difficult to relieve beyond the age of eighteen ; yet in one or two above that period my endeavours have been fortunate ; but the earlier the attempt the more certain is success ; for it is observable, that those who are in the most distorted state at the time of manhood, were very slightly so in infancy, which
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it is more than probable might have been totally prevented, had proper care and attention been paid to them in their earlier years, and themselves preserved from the infelicity of dragging out a weary and miserable existence.

Still notwithstanding, it is beyond a doubt, that a well-formed spine is the support and fulcrum for the proper direction of the different motions of the muscles necessary for the attitudes of the machine; yet to give them these advantages, two properties in the spine are requisite, **STRENGTH** and **PLIABILITY**, both which the all-wise Author of Nature has bestowed after a wonderful manner, by making it consist of a number of pieces, as we see, exactly adapted to each other; firmly and strongly conjoined; which junction is more close than in any other joints of the body. Still in delicate habits we find, after long confinement in bed from illnesses, such as fevers, measles, small pox, &c. the habit will be much relaxed, the vertebræ and cartilages expanded, and a greater space left between them; all which are made obvious from the increase in height of the stature of children after such indisposition; hence this strength and firmness then will be impaired, especially in younger subjects, because the vertebræ are not ossified, nor the cartilages become so firm as in adults. Under such
cir-

circumstances from standing or sitting up, the spine is disposed to sink under its weight, and become curved, if great care is not taken with such children : which curvature, was it to be simple, and remain in one reclining state, would occasion the body to lean on one side ; but by the efforts of nature endeavouring to assist herself, there is generally formed another, as delineated *in plate the first*, in which we discover the state of the distortion. The lumbar have a different inclination to the dorsal vertebræ, hence is the body shortened ; the ribs recline in proportion to the turn of the spine to the ilium ; the shoulder is elevated, and appears, as many think, bigger ; as does also the hip, occasioned by the spine being out of the center, and whichever way it turns, has the appearance of the shoulder and ilium being larger. This distortion is easily discovered by the shortness of the body compared with the length of the extremities ; for the elbows, instead of falling down as low as the waist, are lower in proportion to the twist of the spine ; and on that side which sinks in, the ribs are generally crowded together, and in some close to each other, as *in plate the second*. In some the lungs on the opposite side cannot possibly act in respiration, but with extreme difficulty, if at all, being so confined by the acute angle formed by the ribs on that side.

A young

A young lady twelve years old, in whom the distortion of the spine had been increasing for some years, fell under my care. The left ilium was totally hid by the false ribs; the dorsal vertebræ so greatly curved, that some of them were intirely under the scapula, that they could not all be traced. After a few months attendance, she told me, that she had got a new hip, for so she expressed herself, which was the re-appearance of the hip from the elevation or extension of the spine; which continued to increase till at length the hip formerly covered was equal to the other; the spine also was brought from under the scapula in a more direct line, as when situated in the center, to which succeeded the natural position of all the other parts, and a restoration of her health, which before was greatly impaired from this cause.

But we are not to imagine that this is the singular mode in which distortion takes place, the appearances vary according as the spine takes its turn from the center. Suppose the lower part of the spine turns obliquely towards the left, as it usually does, part of the abdomen and false ribs reclines by degrees. In some it covers that hip, which makes the appearance as if the hip sunk in, and the right hip greatly unequal. In some the

ilia without projecting, appear to turn one before the other, the vertebræ of the loins, and os sacrum determining the position of the hips.

But where the body of the vertebræ are consumed by absorption, &c. the spinal processes, which Divine Wisdom formed for the guard and defence of the spinal marrow, projects outwards and inclines the body forwards.

If the distortion is in the neck, the head will of course bend forwards, but by the power of the muscles the patient will be enabled to hold his head back. These often proceed from external injuries, as from falls, blows, &c. and should this mischief occur in the upper vertebræ of the neck so as to cause a separation of the intercostal nerves, death instantaneously ensues. In proof of which, we have two cases, which happened near Bristol. Two men both fell from a haystack, and by the violence of the fall in one, the separation took place in the upper, in the other, I think, between the third and fourth vertebræ: in the former the intercostal nerves, which run to the diaphragm, were divided: inspiration ceased, and he died suffocated: in the other a paralysis ensued, and he lived only a few hours. These vertebræ are curiously preserved in spirits by Mr. Smith,

fur-

surgeon at Bristol: and we must observe, that such fatal catastrophes must ever be the consequences, where injuries so violent happen to these nerves, on which depend life and motion. If the injury is formed lower down in the spine, it may deprive the patient of motion in the parts below, but not of life.

A dislocation of the upper vertebræ of the neck cannot happen without great violence being done to the phrenic and intercostal nerves, and those called par vagum, (which are connected with the diaphragm, a part of the machine so important to life, that the great philosopher BUFFON called it the seat of the soul) and also the spinal marrow, which claims no small share of consequence in the conduct of the animal œconomy; and should this be displaced, almost at its very commencement, an infinite number of parts are essentially injured. Hence we see, though both these parts of the spine are of such moment to the machine, that the degree of fatality from injuries happening to one or the other is very different; the reason of which is obvious; because the parts dependant on one are more immediately concerned in the preservation of life than the other: and though the injuries their dependant parts may sustain, are similar respecting themselves, abstractedly

considered, yet collectedly with the machine, their importance is widely dissimilar; for whenever the spine is wounded so as to affect the nerves, either by accident or disease, all the parts supplied with these nerves below the wounded part, lose their sensation and voluntary motion; but these parts are not essentially necessary to life, therefore the animal still exists; but when the intercostal nerves, and those serving the diaphragm are impeded in their function, suffocation ensues; because the diaphragm and intercostal muscles cease to act, and cannot expel the air from the lungs; hence is a stop put to circulation of the sanguinary mass, of which death must be the inevitable consequence. For this discovery we are obliged to Mr. J. Hunter, surgeon, as observed by Mr. Cruikshank, anatomist; who, when lecturing on this part of the machine, says, that Mr. J. Hunter made the following experiment; he divided the nerves of the upper vertebra of the neck and intercostal nerve, which runs to the diaphragm in a dog, on which the animal instantly expired from suffocation.

In cases where the body of the vertebræ is wasted, from whatever cause, its first outward appearance is occasioned by the processes of the affected vertebra, projecting about the size of a hazle nut; which gradually increases, as the state of the
the

the vertebra depends upon the nature of the habit, and superincumbent pressure ; for the patient depressed for want of proper support and assistance, the basis of such support giving way from the diseased state of one or more of its parts, the superstructure of course must fall ; so is it in all cases of distortions of the spine.

There are some cases of incurvation, which though we cannot attribute them to cold, or sea bathing, because the curvature has taken place before, still we may look upon this practice as a confirming cause ; for where the distortion has been of any long continuance, after either of these measures have been adopted the muscles are contracted ; and I have seen some in which the curvature of the spine could be more easily removed, than the rigidity of the muscles conquered. They appeared like tight cords fastened to the two ends of a bow ; the fleshy fibres shortened, and seemed to have attained a degree of hardness. This practice of bathing distorted children, though recommended by many, is highly injudicious, as it contributes more to fix the distortion, at least renders it infinitely more difficult to subdue.

Curvatures of the spine are frequently occasioned from too great confinement ; sitting long in one

uniform posture, such as tambour and other frame work ; drawing, writing, &c. for frames and desks on which these employments are exercised, are in general too low ; from whence those that follow these pursuits, are apt to bend and twist the spine, oppress the chest, and raise the shoulders ; which particular forms in a series of time fix themselves, especially in those who pay close attention in these reclining positions. These distortions happen most frequently in females, on account of the delicacy of their frames, being more subject to debility than the other sex ; and devoting themselves more to a sedentary life ; for close confinement, want of proper exercise, and fresh air greatly contribute to weaken the system, retard circulation, impede digestion, and promote an accumulation of crude and vitiated humors ; all which may truly be considered as powerful auxiliaries in bringing on this disease.

Whilst I am on this subject, I cannot avoid reciting a circumstance of a physician and author of some consequence, who had a son of about thirteen, of a very weakly and delicate constitution ; he, instead of obeying the dictates of an injudicious fondness, conducted himself consonant to the laws of rational prudence ; and would not permit his child to be nursed up in a warm room,
and

and pampered with destructive delicacies ; but sent him to a friend, by profession a carpenter, desiring him to exercise his son in his business adequate to his strength, and as much in the open air as conveniently he could. The employment was meant more for amusement than labor : by these means he had the felicity to see his son recover his health and strength ; took him from this employment, and transferred him to the school of physic ; which art he now practises, having enjoyed his health perfectly ever since that period. Indeed, from the earliest times, exercise has been held in the highest estimation. HIPPOCRATES and GALEN have written copiously on the subject ; and many other authors, enumerated by Mackenzie, even in the cure of diseases. PLATERUS says, that Herodius was cured of the hypochondriacal disease by exercise. PAUSANIAS relates, that Hyfmaneus was relieved from great weakness of the nerves, by addicting himself to the five Olympic exercises, and thereby acquired such a degree of vigor, as to obtain many prizes at those games ; and PLUTARCH tells us that Laomedon was perfectly cured of an obstinate disease by exercise, so as to excell in running. A patient of Dr. Buchan's was cured of a nervous disease by digging in a garden : and indeed if we consider the effects of exercise, we shall cease to wonder at the great

benefits which accrue from its use ; for it is well known and universally allowed, that exercise accelerates the circulation of the blood ; invigorates the nervous system ; gives firmness and elasticity to the muscular fibres, and strength and pliancy to the limbs ; promotes perspiration, secretion and excretion ; quickens digestion, and is infinitely serviceable in the due distribution and salutary application of the nutritious fluids.

But to return to our subject, of all the causes of distortions or curvatures of the spine, I consider the mollities ossium, or softness of the bone, as the most general and frequent. In this case it is possessed of great pliability, and will mould itself to any form, or bend without breaking ; which will be more or less, according to the weight it suspends, or sustains ; therefore those in this state which support the greatest weight, are always most bent : and indeed this cause is so common, that wherever we observe a curvature, we may for the most part suppose the mollities existing as the predisposing cause.

Physiologists have taken great pains in order to discover the true cause of these appearances ; GLYSSON says, there is no defect of bony matter in these cases, but that it runs out of its proper direction,

as in the spine it pushes beyond the edges of the vertebræ, &c. However, the most satisfactory hypothesis seems to be; that in some part or other of life, from some constitutional disorder, there is a deficiency of ossific matter, whence the bones become soft, and thence in consequence of pressure, they are distorted various ways according to the direction of that pressure. *DISTORTION therefore may be considered as having a softness of the bones for the predisposing, and pressure for the more immediate cause.*

From hence then arise many and great inconveniences, not only giving an unpleasing appearance to the whole contour of the human machine, by distorting the limbs, and twisting the trunk in various directions; which hurt the eye, and often raise very painful reflections on the mind of those who are the innocent, though unhappy objects; but by differently affecting the more internal parts, bring on innumerable complaints; which continue for life, and too often shorten the duration, which otherwise would have been allotted to it according to the laws of nature. For as the curvature of the spine takes place, so do the parts, immediately annexed to it, alter their situation in conformity to the course it observes; and the contents of the thorax, abdomen, and pelvis, which are more
loosely

loosely connected with it, from being thrown out of the proper places, from compression and confinement, perform their functions, not with that freedom necessary to constitute perfect health.

If from this cause the capacity of the thorax is diminished, oppressive respiration, sanguinary congestion, obstructions, tubercles, dropsies of the breast, coughs, consumptions, palpitations of the heart, polypi, &c. may originate. If of the abdomen, indigestion, impeded inspiration, visceral obstructions, schirrosities, dropsies, &c. If of the pelvis, obstinate constipations, piles, fistula, &c. and in women, parturition is rendered always almost tedious, laborious, dangerous, and sometimes fatal. Besides, other more general complaints take their origin from this cause, impeding the operations of nature in the different organs; and hence occasioning debility of the system, and a vitiated state of the fluids. All which may be easily conceived, if we view the state of the aorta, or large artery, which carries the blood from the heart to the extremities, and the minute vessels of the human machine, as it is delineated in *plate the fifth*; for there we find the aorta running through the thorax, and abdomen taking the same curves as the spine. Now as fluids cannot circulate with the same celerity through serpentine, a contrivance
nature

nature has adopted in some parts of the body to retard the blood's motion, or distorted, as straight tubes, lest blood will circulate in the lower limbs, more into the superior parts, as the head and lungs; hence will arise from one cause head-achs, apoplexies, convulsions, pulmonary affections, &c. whilst, from the other, the blood being in its progress retarded, vascular debility will be the result, occasioning œdematous swellings, varices, &c.

Nor is the mollities ossium confined to the spine, or limbs, or any other particular part; but it sometimes becomes universal, and affects the whole bony compages of the machine. An instance of which is extant in the museum of the late Dr. Hunter. The case occurred in a shoemaker of Wapping, in whom the ossific matter of the vertebræ was absorbed. The bones of the arms, legs, &c. were so pliant, that they bent like green twigs; and, indeed, so generally did this softness of the bones prevail, that he was at last confined to his bed, unable to assist himself for a long time before he died,

Nor is this softness of the bones, though the general, the only cause of distortion; it sometimes arises from a caries; which may deduce its origin, though it begins in their internal parts,
from

from external injuries ; as well as from a vitiated state of the animal fluids. When this occurs, it is called *SPINA VENTROSA* by some authors, from the pointed extuberance usually a concomitant of this disease of the bone — by others, *TEREDO*, from carious bones putting on the aspect of worm-eaten wood. However, this affection is universally allowed to take its rise from matter being formed in the diploe, or in the medulla ; for whenever obstructions are formed in the vessels expanded on, or terminating in the medullary cysts, inflammation is the consequence ; and if neglected, or resolution should not spontaneously take place, pus will be generated : and hence commences the abscessus in medulla, which sometimes is accompanied with a dull, heavy pain of the affected vertebra, or spine.

As this disease may arise from a blow, &c. happening at some distant period, though not at that time manifesting itself immediately, nor the bone shewing any marks of external violence, medicines are had recourse to, with intent to alter the vitiated juices, the supposed cause of this complaint. However proper may be this attempt, we would beg leave in this place to remark ; that every effort should be made to take off the superincumbent weight from the part diseased, and restore
the

the spine to its natural situation ; for the weight above depressing those parts which are diseased, greatly assists in increasing the mischief. If we observe the efforts which children make under these circumstances, Nature herself, we shall find, points out the necessity of what we have advised ; for they labour to take off the load, by supporting themselves on chairs and tables ; and when they walk, fixing the hands upon their knees. Thus the diseased part is relieved ; which otherwise would, from the spine being out of the line of direction, be acted upon improperly.

Again ; that such support is necessary, we may be convinced from observing the effects in distortions of the vertebræ of the neck from an hydrocephalus, or watery head ; for here the slender bones of the neck are not able to support the head, which is become too ponderous : so that whenever children thus afflicted are desirous of sitting upright, the attempt would be in vain, without the head was supported by the hand of an assistant. Indeed, in whatever point of view we take this subject ; whatever may be the occasional cause, it is obvious the support from pressure must always be attempted ; and the superincumbent weight taken off ; which, in much the greater number of cases, prove a remedy ;
and

and in all, greatly assist and co-operate with the use of medicines given internally where necessary. — And now, as several opinions have been given by men of eminence on matters relative to this subject, we shall beg leave to insert some of them here, and see how far they may corroborate what we have recommended, or furnished observations upon.

Dr. JOHN JEBB gives some remarks in the following terms :—“ In several patients of a delicate habit of body, who have experienced scrophulous complaints, I have observed the joints of the knees to be feeble, swoln, and the articulation painful ; also, if the spine was similarly affected, many of them evidencing great sensibility upon the gentlest exercise, or even in a coach ; palpitation of heart ; incontinence of urine ; general debility ; and irregular pains in the legs and feet, have accompanied these symptoms.

“ In other instances these pains have been termed rheumatic by the patients or friends, and attributed to the effects of cold. Very frequently are some children, nearly about the same age, labouring under similar complaints, which were, it is reasonable to presume, derived from the same source.

“ In

“ In some, the vertebræ of the loins were
 “ evidently protuberant ; in others, a small de-
 “ gree of protuberance might be observed in the
 “ vertebræ of the back : in these cases there is a
 “ considerable prominence of the belly, and other
 “ signs of obstruction in the glandular system ;
 “ it is supposed to be one of the conglobate
 “ glands, of which many are found in the vic-
 “ inity of the lumbar vertebræ. In other cases
 “ there is ground for suspicion, that the radices
 “ of the vertebræ, or the intervertebral substances,
 “ are primarily affected with the same scrophu-
 “ lous disposition inducing this distemper, which
 “ is known so frequently to affect the acetabu-
 “ lum of the thigh. The paralysis of the lower
 “ extremities has a debility in the functions of
 “ the bladder and rectum, which takes place
 “ when the spine is the seat of scrophula, and
 “ are the mere effects of the disorder occu-
 “ pying the vicinity of large portions of that
 “ substance, which is the proper seat of sensibi-
 “ lity and voluntary power.”

Mr. Potts says, in his Observations on the
 Curvature of the Spine being discovered :—

“ In infants and children, and those who had
 “ been afflicted with this disorder but a short
 “ space

“ space of time, that the ligaments connecting
 “ the vertebræ, which formed the curve, were
 “ in some degree altered from a natural state, by
 “ being somewhat thickened and relaxed; and
 “ that the body of these bones were palpably
 “ spread and enlarged in their texture, just as the
 “ bones forming the articulation are, in children
 “ who are called rickety: that in those who had
 “ long laboured under the distemper, and in
 “ whom the symptoms were aggravated, what-
 “ ever might be their age, the cartilages were
 “ still more spread, and more enlarged, and more
 “ inclining to become carious; and the cartilages
 “ between the bodies of the vertebræ much com-
 “ pressed and lessened in size: and that in all those
 “ who had so long laboured under the disease,
 “ as to have been destroyed by it, or by its con-
 “ sequences, the corpora vertebrarum were com-
 “ pletely carious, the intervening cartilages totally
 “ destroyed, and a quantity of sanies lodged be-
 “ tween the bottom bases and the membrane in-
 “ vesting the spinal marrow.”

And farther remarks; “ When it attacks a
 “ child who is old enough to have walked pro-
 “ perly, its awkward and imperfect manner of
 “ using its legs is the circumstance which first
 “ excites attention; and the incapacity of using
 “ them

“ them at all, which soon follows, fixes that at-
 “ tention that alarms the friends.

“ If the incurvation be of the neck, the child
 “ finds it inconvenient and painful to support its
 “ own head, and is always desirous of laying it
 “ on a table, or pillow, or any thing to take off
 “ the weight.

“ If the affection be of the dorsal vertebræ,
 “ there are general marks of a disordered habit ;
 “ such as loss of appetite, hard dry cough, labo-
 “ rious respiration, quick pulse, and disposition
 “ to hectic ; and as in this state of the cure there
 “ is always, from the connection between the ribs,
 “ sternum, and spine, a great degree of crooked-
 “ ness of the trunk ; these complaints are by
 “ every body set to the account of the deformity
 “ merely.

“ In a case where no violence has been com-
 “ mitted or received, some will tell you, that the
 “ first intimation was a sense of weakness in the
 “ back bone, accompanied with what some will
 “ call a heavy, dull kind of pain, attended with
 “ such a lassitude, as rendered a small degree of
 “ exercise fatiguing. In infants the curve is sel-
 “ dom noticed, till it has got to such a size and

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“ state

“ state as to demand attention ; from the deformity,
 “ mity, previous to this, all the marks of a distemper
 “ temper which appear in the child pass for the effects
 “ effects of general weakness, and are treated as such
 “ such differently, by different people, and under different
 “ different circumstances, but never with any permanent
 “ permanent good effects. Weak and delicate children
 “ children are the most frequent subjects of this distemper ;
 “ and when in these it seizes on the dorsal vertebræ,
 “ great deformity of the trunk, both before and behind,
 “ is the almost inevitable and necessary consequence :
 “ this though will be different in different persons. The
 “ primary and sole cause of all the mischief is a distempered
 “ state of the parts compressing or in immediate
 “ connection with the spine, tending to, and most frequently
 “ ending in a caries of the body, or bodies of one or more
 “ of the vertebræ.”

Dr. HUNTER, whose lectures I attended, and from whence I received no small information, in speaking of the distorted spine, adverts to that disease called the RICKETS, and says, “ It is absurd
 “ to think this a new distemper, and that it only began
 “ in the last century, we have instances of it in every
 “ age ; and it has been observed by all historians, that
 “ this disease makes its appearance outwardly, and may
 “ be seen and understood by men

“ men of common sagacity without anatomical
 “ knowledge. The rickets appear in children at
 “ different periods of age, but particularly in those
 “ who are very young. In this disease some of
 “ the distinguishing marks are a thickness of the
 “ joints, the fontanel expanded, a largeness of
 “ the head, and those who are afflicted are inactive. When we examine the joints, one of the
 “ strongest proofs is, if there should be a thick-
 “ ness in those of the radius and ulna, appear-
 “ ances like knots upon the extremities of the
 “ ribs, &c.; the fontanel continues long open,
 “ the head not only large but remarkably square,
 “ and they are backward in teething. On dissec-
 “ tion of these subjects, we find the bones soft
 “ and spongy, so much so, that they can be
 “ easily cut with a knife; which when we ex-
 “ amine with more care, we find in them a de-
 “ gree of transparency, even in the middle of
 “ cylindrical bones, and they are also more cel-
 “ lular. The bowels are large and weakly, and
 “ ossification is slowly completed.”

DU HAMEL is of opinion, that the exuberancy
 of growth more on one side than the other, is
 owing to a disposition of the body to throw out
 more nourishment.—MAYIS attributes it to the
 antagonist muscles.—In dissecting such subjects we

find in them but little bony matter, and in general their constitutions are in a state of debility: some we find universally crooked.—The Dr. shews the bust of a woman in whom every rib had been fractured, some more than once, occasioned by the most trifling cause, which were all again united; and brings this in proof of the extreme softness of the bones in that subject; similar to that of the shoemaker of Wapping, whom we have before mentioned. He endeavours to refute the idea of this disease being occasioned by the prevalency of muscular motion alone: on this consideration, that when once the spine gets an inclination to one side, one curve produces a second, &c. which would not be the case was it owing singly to muscular action; for then the spine would only be curved in one place, towards that side or part where the muscles exerted their action the most forcibly, so as to exceed the power of those which were intended to operate against and counteract them.—In considering the nature of this disease, whether it arises from pressure, or is occasioned by an hereditary, scrophulous, or venereal taint, he concludes the predisposing cause a constitutional softness of the bone.—In speaking, therefore, of the treatment of weakly children, he advises to give them strength by the use of the bark, sea bath-

bathing, and sea-air; and considers cold bathing, * if properly attended to, almost a specific, and the use of proper instruments, amongst which he gave the preference to my apparatus; and on which, after he had permitted me to explain its action to above a hundred pupils at his lectures, in the years 1776 and 1777, he makes the following animadversion: “ You see, Gentlemen, that this
 “ mechanical contrivance not only takes off the
 “ superincumbent weight, but extends the spine
 “ in a constant gradual progression; and thus,
 “ continued for a time until by a proper deposition
 “ of ossific matter into the mollified vertebræ, they
 “ become firm and compact bones: hence then
 “ the subject will be made straight, and remain
 “ in that situation; for there is a disposition in
 “ nature always to help herself when oppressed, if

* With respect to cold bathing, whatever may have been said in its favour, I must observe, that I have in general found it most adviseable to conquer the spinal defects first before we apply to this corroborant remedy, for the parts affected yield more readily to the extensive powers applied, when in a relaxed state. In some cases, where the cold bath has been prematurely made use of, I have found it difficult to make any progress with my patients, and have been obliged to have recourse to the vapour bath, and other relaxing remedies. But this is not the case in all, in some very delicate habits, at proper times cold or sea bathing is useful, and where bathing has been improper, the sea air has appeared extremely beneficial.

“ she is assisted or relieved by art.” And in proof of the success of this apparatus, he produced an account of it, from Dr. Bafard, with respect to his son (which letter is inserted in this work. He still further observes, that though in many cases the spine may be exceedingly compressed, and no paralysis be the consequence, yet still it takes place in compressions of the spinal marrow, and induces that disease called *paraplegia*, or palsy of the lower extremities; which complaint, if it comes on gradually, is certainly owing to such pressure; and here there appears not any remedy equal to this contrivance, which may be called the apparatus spinalis extendens: and, in fine, in all cases of distortion, we have every reason to expect success from its application, particularly if it is made use of at an early period, for all people become crooked after birth—no child, except monsters, being born in a state of deformity. From whence it is clear that this disease is owing to some debility or morbid affections taking place, occasioned by accidental causes, and may be, for the most part, entirely conquered or relieved, as far as the constitutional stamina will permit.

We have enumerated amongst the causes of distortion, debility; and that this may be in the number of those which are called remote, the following

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ing fact will establish : A recruiting serjeant had enlisted a man whose height was just adequate to the standard which limited the proper size ; after a long day's march he was presented to the officers in command, with his other comrades ; on measuring him, he at this time proved too short by two inches ; the serjeant was reprimanded and astonished, unable to account for so great a deviation in so short a time. Dissatisfied at the accident, the man was again measured, after resting the whole night, and proved then full as tall as was necessary, to the no small joy of the desponding serjeant.* There can be no doubt but this circumstance arose from fatigue, owing to the delicacy of the man's frame, being unable to bear the severity which fatigue, if often repeated, or continued for a series of time, would in all probability have given rise to distortion of some sort or other.—However, be that as it may, with respect to the mode of relief in these cases, our ideas are sup-

* The Dr. supposes that in cases like these the cartilages which unite the vertebræ shrink, some one line, some two ; therefore, as the spine consists of twenty-four vertebræ, the shrinking of one, added to the other, throughout, will account for the loss of height ; and that this is owing to pressure upon them being greater than their weak or delicate state can bear, which being taken off, by elevating the superincumbent weight, nature becomes her own physician in restoring what is lost.

ported by men of the first eminence, as far as the principle upon which we act is to be considered.

Monſieur VACHER remarks, “ That the principal object in theſe circumſtances is to counter-act the diſtortion by a gradual and conſtant extension of the ſpine.” In proof of which he obſerves, “ that a ſlender ſtick will ſupport a conſiderable weight when erect, but when it is bent, ſinks under it immediately. It is the ſame with the ſpine, when once its natural form is altered, whatever may be the cauſe of that alteration, the weight of the head, and other parts above the curve, will, by depressing it, increaſe the deformity, particularly in young children. To remedy this evil, *we muſt reſtore the vertebrae to their natural ſituation, and keep them ſo by ſupporting the ſpine till it has acquired ſtrength to reſiſt a force that would otherwiſe increaſe the curvature.* When the ſpine is erect, it is able to ſupport the weight of every part of the body above it, but when it is curved, its ſtrength decreases in proportion as it deviates from its perpendicular ſituation.”

Dr. TURNER obſerves, after giving a ſketch of the whole ſpinal compages, one of whoſe principal uſes is for the paſſage of a production of the
brain,

brain, which is conveyed to the body and limbs, productive of such noble and excellent effects, “ that as in parts of the brain itself, there commonly ensue the most formidable symptoms ; “ so here likewise, if the vertebræ happen to be “ suddenly distorted, much more intirely luxated, “ this second brain,” as he terms it, “ being “ compressed, the distribution of the said fluid or “ vital energy must be intercepted, and consequently paralysis ; for convulsion, with a total “ eclipse of the animal faculties, come on presently after. The paralysis of the limbs depends on, whether one or both sides of the “ spinal marrow is affected, and if the compression be very great, there follows a general “ resolution of all the nerves below.”

Dr. ASTRUC, professor of medicine at Paris, gives the following account of this disorder : “ As the bones are preternaturally soft,” he thinks, “ there is a vicious fermentation, which holds a “ medium betwixt that of the lues venerea and “ scurvy ; since it is not so active as the latter, nor “ so slow as the former : the lymph impregnated “ with this acid salt or leven, has a greater influence on the bones which it penetrates, than “ on the soft parts ; just as aqua fortis dissolves “ silver, but not gold : thus the bones grow soft-
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“ ter and bigger, particularly such as are most ex-
 “ posed to cold, as those of the hands and feet.
 “ The disorder still augmenting, the spina dorſi
 “ is at length affected, the vertebræ grow softer,
 “ and by their perpendicular situation and weight
 “ become thinner. Thus the medulla ſpinalis,
 “ and vertebral nerves are compressed. A relaxa-
 “ tion and inactivity are produced in all the parts
 “ dependant on the action of these parts of the
 “ system, and hence is nutrition ill performed,
 “ as we see in palsy.”

From the nature of ossification, from the exact
 knowledge we have of the spine, with the vari-
 ous dependencies of its parts, situation, and uses,
 added to the opinions of so many eminent pro-
 fessional characters, it is rather a matter of sur-
 prise, that such a number of errors should still
 exist in the management of children, in attempt-
 ing to prevent distortion, or in curing the malady
 in the early state of its formation. Many medical
 gentlemen, from observing the evil consequences
 accruing from ill-formed stays, universally repro-
 bate their use ; and from this general opinion, it
 is no uncommon thing to see them prohibited in
 children, and cast off in toto. We are far from
 imagining this always right ; for if stays are made
 to fit easy on the breast and hips, close, and flat
 to

to the back and shoulders, they become a proper support to the body ; but if uneasy, they prove prejudicial to children, for as ossification is not completed, the cartilages, nay, fore-part of the ribs, are in a tender pliant state, having not sufficient strength to resist pressure, therefore require such a support to prevent the inconveniences which might otherwise arise. This also is proveable from the great use found in well-formed stays in those delicate constitutions which are recovering from severe illnesses.

But if we observe the present fashion of the stays now made, there is scope sufficient for argument, and the whole force of its artillery should be employed against the pernicious custom ; for the fore-part of these are now made to sink in the middle against the diaphragm : the stomach and other parts of the viscera are compressed ; indigestion, with all its train of complaints succeed, and respiration cannot communicate the force of its action properly. Hence should they be so constructed, as not to oppress the vital parts ; nor, in order to improve the shape, should they be made too tight about the hips, for from hence the muscles are contracted, the blood vessels and nerves compressed, and vascular as well as nervous and muscular action impeded ; all which contribute to injure

jure the constitution in general, and greatly dispose in the younger part of the sex to occasion distortion. Nor indeed is there the least necessity to run any risque for acquiring the wished-for advantage to the shape; stays might be made easy and at the same time elegantly fashioned; acting as a support to the body, and giving the appearance of an enviable figure to the shape, were the the back of them made narrow, and width and roundness given to the fore-part. All compression would here be avoided, and the waist preserve a delicate and pleasing form: but for the cure of deformities many inventions have been offered, productive of little or no good effects.

Some recommend the *neck swing*. This is fixed to the top of the room at one end, and into the other is fastened the head of the child, suspending the body by the chin and hind head; in this situation the child swings as long as it can bear it: but, though the spine will appear straight while the child is kept in that posture, it cannot continue so above ten or fifteen minutes at one time, whence the spine soon falls into the same state as before, and becomes often worse from the violence of the operation, as it tends to strain the ligaments and cartilages which unite the vertebræ, particularly those of the neck, as they are the most slender,
and

and having the whole weight of the body hanging to them ; hence, instead of strengthening the parts, or supporting them till nature can relieve their defects, they are more enfeebled, and left in too debilitated state : and I am persuaded many ladies, to this practice, may attribute the occurrence of the disease, for whether the frame call for such an attempt or not, it is common to make use of this swing—how preposterous ! What can we expect from placing a delicate frame, where the cartilages are already in too expanded, and the ligaments in too relaxed a state in this situation ? let common sense determine.

Nor is the SCREW CHAIR an invention which can boast of higher excellence ; for this is nothing more than a swing screwed to the back of a chair in which the patients sits, and so fixed to the head, as in the other case, that the seat is scarce felt : hence is the spine extended ; but here the same objections lie as to the former, being equally inefficacious, without perseverance almost impossible to be pursued by young minds, and dangerous if used with the same impropriety. Though Sir Robert Rich presented me a young lady cured by the screw chair ; but he compelled her to sit fixed in it for ten hours every day ; such compulsion would be rarely practicable ; hence the contrivance is of little use.

But

But the most ridiculous practices arise from the pursuit of an erroneous idea; for some imagine the hips increase in size, and thus grow out of form; hence do they apply large weights to the part protuberating, making the patient carry on the affected hip, two or three pounds of lead, in order to reduce it; or if there be a similar appearance on the shoulders, brace it down with straps; fasten a weight upon it, or press it many times a day with their hands: all which are indeed ill-judged expedients, adding to, instead of alleviating the mischief, by increasing the pressure, and consequently the incurvation of the spine.

SWINGING THE DUMB BELLS, which is moving the arms backwards and forwards, each hand loaded with a lead weight, is also amongst the practices used for the above purpose of curing distortion; but, like the former, augments the malady: nor indeed is there any mode that can be so safely depended upon, as that which is adapted to take off the superincumbent weight with ease, and by gentle degrees, allowing, whilst under cure, a sufficient time for nature to exert her power, and give strength to the debilitated parts, by a proper supply of ossific matter. A strong proof of which we have in the following case:

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Some years ago I was called to a young lady, with the late Dr. Hunter, who, amongst the various modes which had been tried unsuccessfully, had been directed to swing the dumb bells. The treatment which had been pursued throughout was disapproved of by the doctor, and he committed her solely to my care. In the space of six months there was a perceptible alteration in her shape, for the better, so much that she was considered by her friends as perfectly recovered, there being no appearance of the incurvation of the spine remaining, consequently my attendance longer was thought unnecessary. The lady was removed from London, and travelled through different parts of the country in a season of the year excessively warm. The habit of body being relaxed and the spine extended, those sides of the vertebræ before depressed were relieved, but still continued in too soft a state, with the ligaments and cartilages more than naturally expanded, the weight and superior parts being let down upon those which still remained in a debilitated state, to which we may add the exercise and motion of the carriage, the distortion in a short time returned, of course, in as high a degree as before. She was then ordered, by general consent of her friends, to bathe in the sea, but to no purpose. In some months after she returned to town—I was sent for, and, on examination, found the
child

child crooked as on my first seeing her; I raised her by the head to see what motion there was in the spine; for if the spine does not in that situation yield, in any case, I have little hopes of success; and now I found the vertebræ, as it were, fixed together, by the contraction of the muscles, which I attributed to injudicious bathing: had she continued my apparatus until the parts had received the proper form and firmness, I have no doubt but the cure would have been perfectly completed, which was now prevented, by bracing the muscles too much whilst the spine was in that distorted state. I had another case to which I was recommended by Mr. John Hunter, which terminated in a similar manner, from the too-early disuse of the apparatus.

And now, from what we have above advanced, it will appear clearly to any common capacity, that causes of distortion are,

A want of ossific matter in the vertebræ, and too great pressure from the parts above the incurvation; and that the common modes which have in general been practised, are deceptive and mischievous, calculated rather to confirm, than cure or alleviate the complaint: and also, that in order to be of real service, it is necessary to take off the
super-

superincumbent weight from the parts affected, by the easiest and most gradual means possible; continuing this process for a longer, or shorter time, which will be determined by the strength or weakness of the system, and the quick or tardy exertions of nature. All which the following histories will, we doubt not, satisfactorily confirm, and to which we shall now immediately proceed.

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CASE

C A S E I.

DR. Bayford, formerly Assistant Surgeon to St. George's Hospital, Hyde Park, now Physician at Lewes, in Sussex, had a son, about eight years old, in a deformed state, relative to, which he took the opinion of many medical men of eminence : at last Mr. Bromfield, Surgeon to the Queen's Household, recommended him to me. He stated the child's case, and asked my opinion ; and received answers so satisfactory, respecting the mode of cure which I proposed, that shortly after he sent for me. When I went, I found the child unable to be moved out of bed, with every appearance of approaching dissolution. I was informed, that at one time he could not swallow his food, and was convulsed : I took proper dimensions for the apparatus as he lay, which was applied with the desired effect. Dr. Bayford being an ingenious mechanic, as well as surgeon, well understood its operation, and superintended the application. Some time after I had the satisfaction of seeing the child ride out in a little carriage : and in a few months observed him, hearty and strong, running about the house with a great stick in his hand about seven feet long. Last August I had the pleasure of

of being in the young gentleman's company ; we had great satisfaction in seeing each other, and our conversation turned on the circumstances of his cure ; when he informed me, that after Mr. Potts' publication, his father was desirous of trying whether the issues recommended by him would be farther useful ; they, however, had no effect : he now remains in full health a student at Cambridge, and from the date of Mr. Bayford's letter, it will appear he has continued well for near fourteen years.

“ East Barnet, Aug. 26, 1776.

“ Mr. JONES,

“ I HAVE great pleasure in acknowledging the
 “ benefit which my son has received from the
 “ apparatus constructed by you. At the time of
 “ its application he was entirely paralytic in his
 “ lower extremities, and had very little use of his
 “ right arm. He could not bear the common
 “ swing ; and the cold bath brought on such
 “ dreadful cramps, that he was obliged to desist
 “ from it. The cause of his complaint was de-
 “ rived from a distortion of the bones of the neck,
 “ which were so displaced, that the second and
 “ seventh vertebræ nearly touched. He is so far

“ recovered, that he can now walk with ease and
 “ pleasure.

“ I am,

“ Your humble servant,

“ DAVID BAYFORD.

C A S E II.

Mrs. B——, of Southampton Buildings, had a daughter six years old, afflicted with a distortion of the lower vertebræ, next to the os sacrum ; this lady had all the advice that could be come at. She applied the neck swing, bandages of different sorts, &c. but to no purpose ; the weight of the body increased the distortions, insomuch that the spinal marrow was compressed, and a paralysis took place in the lower extremities. She was ordered to Bath, but no relief was obtained : she grew worse after, and returned to town, for some time in that helpless state ; she was then ordered to bathe in the sea, but that proved abortive ; and after a fair trial again returned home. The lady, fully satisfied every means had been used which could be thought of, was yet much concerned, after spending so much money, that no relief could be obtained. I was sent for, and found the child unable to hold herself upright ; that either sitting on the lap, arm-chair

chair or carpet, her abdomen rested on her thighs. The mother informed me of the means which had been used by the medical gentlemen who had been consulted, and their opinion, that it was a hip case, and incurable ; I therefore wished to decline interfering, but the lady intreated me to make trial, saying, if I did not succeed she would not blame me, as it was her particular desire. To her intreaties I consented, and desired the child might be undressed. On examining, I found the bodies of the two lower vertebræ of the loins were diminished ; whether the cause was from any other disease or softness of the bone only, at that time I could not so well determine ; but this I perceived, that it was highly necessary to take off the superincumbent weight. I was not devoid of hope, but saw that it would be attended with much difficulty ; I therefore proceeded with great attention. In a little time after, the child began to walk ; at first with her hands on her knees, but soon in an erect position, so that in about sixteen months she could run about as well as in common with any child of the same age. The Rev. Mr. Stafford of Penkridge, about two years after, as well as others, heard of the facts with great satisfaction from this young lady's mother.

C A S E III.

A FRIEND of mine being on a visit to Mr. Gray, of Clerkenwell, saw his youngest daughter much distorted; the lower limbs were paralytic, and had been so for a long time, owing to the spinal marrow being compressed. My friend much concerned to see the child, (about ten years old) spoke of me, but was informed that much money had been spent and to no good purpose: besides, some medical gentlemen had declared the case irrecoverable. At length I was desired to call, and applied my apparatus; in a few weeks the child recovered the use of her limbs, and in as many months could walk out of doors, and has remained well these eleven years.

C A S E IV.

Miss B. aged seventeen, was exceedingly distorted; her right shoulder was raised nearly to the ear, owing to the curve being mostly in the dorsal vertebræ, so that some of them laid under the scapula or blade bone, attended with shortness of breath, * and other complaints. The young lady

* Dr. Hunter, when speaking on breathing, says, the all-wise Creator in his wisdom, ordered that the bones of the chest

lady was put under my care; she was soon relieved from those symptoms, and in about fifteen months restored, to the satisfaction of her parents and friends. Her height was increased four inches.

chest should be arched, and completely ossified even in children at their full time, and firmer than any other part of the body; as an infant is not called to walk with its feet and legs, nor to work with its hands, but cannot live without breathing; and that the reason of people drawing their breath with noise and great labour, is supposed owing to the ribs being too cartilaginous or ligamentous; or the chest narrow; so that when it is raised up by the lungs, it is not sufficiently expanded for necessary respiration, but will appear as if beaten in. He recites the account of a labour to which he was called, where the child at five or near six months was born alive. It made many attempts to breathe, and at last succeeded, in some measure; but at every inspiration the breast bone sunk instead of projecting forwards to make room for the expansion of the lungs. The reason he assigned for this new appearance, was, that the ribs at that time were only in a state of cartilage, and this is a substance too flexible for the muscles to act upon with advantage, so that they could not pull them outwards or forwards, as in the adult, to make room for the free admission of air: hence an effort to breathe being instinctively made by the child, a vacuum was formed within, and the weight of the external atmosphere almost pressed the bones of the breast to the back; and whilst the doctor held it on his lap, pitying its unhappy fate, the infant expired.

C A S E V.

Miss G. aged thirteen, was much distorted, so that the os ilium was inclosed by the false ribs ; part of the dorsal vertebræ were much under the scapula ; the true ribs twisted in form of an acute angle ; the ribs exceedingly crowded and sunk in on the left side, which contracted the thorax ; (*see plates the second and fifth*). The lungs were compressed, and diaphragm depressed, so that her going up one pair of stairs used to distress her much : the distortion took place when she was sixteen months old, and had been increasing near twelve years. She was put under my care ; and in about six weeks after was able to walk seven miles one day : she was soon relieved from that shortness of breath under which she laboured ; the chest was greatly opened, her appetite increased, her shoulders became even ; and life, instead of being burdensome, was pleasant and desirable.

C A S E VI.

A GENTLEMAN brought his nephew, ten years old to me, with his spine much curved by the bodies of the vertebræ, the sixth and seventh dorsal, (*similar to plate the third*) much depressed by weakness.

ness. It had been increasing for some years : bathing, &c. was ordered, but he grew worse ; with violent pains in the viscera, thighs, and legs ; nor had he power to stand without leaning on a table ; or when out of bed, obliged to lay across a chair on his belly, and frequently walked with his hands on his knees : he was placed under my care at my house ; those distressing pains were soon removed, and in five weeks he walked three or four miles at one time without any assistance ; in a fortnight after this he walked from my house to Newington Buts, without stopping to rest, and returned the same day without being tired, which is six miles : the day after he performed in the same manner to, and from, Hampstead : he then left me hearty and well, though the apparatus was continued for several months ; and has now continued healthful for these eight years.

C A S E VII.

MASTER Griffiths, of Crane-street, Chester, was recommended to me while I was there, by Mr. Orred, surgeon of that city : on seeing the child I almost despaired of success ; as it appeared to me that the bodies of the fifth, sixth and seventh dorsal vertebræ were destroyed by the projecting of the spinal process ; the ribs following *similar to*
plate

plate the third, the chest was much contracted; great difficulty in respiration; the viscera much compressed, attended with pains in the lower extremities. I applied my apparatus and stopped till it was properly adjusted. In my return from Manchester, I saw him much recovered, his pains removed, and his appetite returned. Some months after his father sent me the following letter:

“ Chester, Sept. 27, 1777.

“ Mr. JONES,

“ I HAVE great pleasure in acknowledging the
 “ benefit my son has received (since the twenty-
 “ fifth of July last, which was the first time it
 “ was used) from the apparatus constructed by
 “ you. At the time of its first application, his
 “ back was very crooked, his breast projected out,
 “ his appetite very indifferent, very restless at
 “ night, with a difficulty of breathing, being in
 “ a very weak and poor state of health. But,
 “ blessed be God, he is grown much heartier,
 “ his breast is more spread, he sleeps and eats
 “ much better, walks with more ease to himself,
 “ and I have the greatest hopes of his back-bone
 “ being made strait by continuing the apparatus a
 “ proper time; as it is much better than it was;
 “ and,

“ and, upon the whole, satisfaction is given to
 “ all that have seen it.

“ I am,
 “ Your humble servant,
 “ EDWARD GRIFFITH.”

C A S E VIII.

IN my return to town through Wales, I was recommended by a gentleman at Whitchurch, to Dr. Owen at Shrewsbury, who sent me to a young lady aged twelve, at Church Strutton, with a total paralysis in all her limbs, but not in the viscera, as they retained their motion; but she could neither move hand or foot. She mostly lay on her back, and received her food or nourishment through a tea pot, as she was not able to sit upright. I was informed every means had been used that could be thought of; electricity, fomentations; nay, they put her legs into almost boiling bran and water, in order to bring her to her feeling, but to no effect; I desired she might be moved a little on her side, to examine the situation of the spine, which was done; I then could account for the cause of the paralysis, from the spinal marrow being compressed. This case being similar to Master Bayford's, who perfectly recovered, I
 had

had reason to believe the same might happen here. The spinal processes of the neck were distorted inwards, and the upper dorsal outwardly ; so that in raising her up, the back part of the head would rest on the projected dorsal vertebræ. In this case I perceived the respiration was not so difficult as in some, the distortion being above, the chest was not so much affected ; she would talk freely : I proposed as I could not stay there, and the case requiring great attention, that she might be brought to town, for I was of opinion that her limbs might be restored to their use : the parents gladly consented. I treated her after my usual method, in taking off the superincumbent weight from the medulla spinalis that was depressed ; when the nerves began to exert their power, she experienced very disagreeable sensations, similar to those which arise from compressing the crural nerves by sitting cross legged ; afterwards a pricking, shooting, tingling pain, as the nerves recovered their energy. This young lady was attended or visited by Dr. Denman, and Mr. John Hunter. Her residence with me was four months ; in which time she was able to walk by herself, work, write, &c. and returned home thus recovered to the great satisfaction of her parents and friends.

“ February 18, 1778.

“ Dear Friend,

“ WE shall be obliged if you will favour us
 “ with an account of Kitty, as we have heard
 “ but little of her since your last. A neighbour
 “ is just arrived from town, who informs us
 “ Kitty can walk across the room, which gives us
 “ great pleasure; but it is not so satisfactory as an
 “ account from you. Hope to hear when you
 “ write, to fix the time for my coming to fetch
 “ her home. Mrs. Harrison joins in sincere re-
 “ spects to you, Mrs. Jones and family, and are
 “ sincerely your respectful friend,

“ T. A. H.”

“ March 14, 1778.

“ S I R,

“ WE arrived at Strutton on Tuesday even-
 “ ing, after a disagreeable journey, as Kitty was
 “ but poorly, and since she came home, has been
 “ very ill; we sent for Dr. Owen; she is now
 “ better, and we are in hopes all danger over.
 “ Mrs. Harrison and self join in compliments to
 “ you and Mrs. Jones, &c.

“ And are,

“ Your obliged humble servants,

“ T. A. H.”

CASE

C A S E IX.

Sent in a letter from Hereford, April 22, 1778.

“ Mr. JONES,

“ I HAVE great pleasure in sending you the
 “ case of Mary Jones, aged twenty years, who
 “ was admitted into the Hereford infirmary, with
 “ her lower extremities entirely paralytic, from
 “ a distortion of the vertebræ of the back. As
 “ she found very little relief from medicine and
 “ the cold bath, I recommended a trial of your
 “ apparatus, which, in less than a month, ena-
 “ bled her to move with crutches ; and the be-
 “ nefit she has continued to receive from the use
 “ of it, has been so great, that she can now walk
 “ with ease and pleasure, without any assistance.

“ I am, sincerely wishing that your ap-
 “ paratus may always meet with the
 “ same success,

“ Your humble servant,

“ THOMAS CAM,

“ Surgeon at Hereford.”

C A S E X.

THE Rev. Mr. Stafford being at Parkgate, in order to have his son bathed in the sea for a curvature of the spine, walking one morning on the sands, his son being carried by a servant, not being able to walk, was observed by a lady of Whitchurch, to one of whose family I had been of singular service ; she asked the child's case, and being informed the curve was occasioned by a fall, strongly recommended him to me, being in that neighbourhood at the time. The recommendation availed not till he visited Mr. and Mrs. Griffith, in Crane Street, who related their child's case ; he saw the effects ; he then at Wrexham and at Whitchurch was satisfied of the effects my means had on each patient there. My success inspired him with hopes of his son receiving the same benefit ; he therefore wrote to me, but business in town, however, prevented my attendance on Master Stafford ; I received a second letter : but I was still unable to leave London. Mr. Stafford brought his son to town, who was at my house, and only remaining with me three weeks, was entirely freed from his pains, and enabled to walk about the streets before he returned. About two years after this, Mr. Potts, Surgeon, published

lished his Remarks on that kind of palsy of the lower limbs which is frequently found to accompany the curvature of the spine, with his method of cure by setons and issues: this came to Mr. Stafford's hands, which put him upon inquiring whether the treatment by issues could be of any farther use to his son; whom, as he had some business near London, he brought to town, and took the opinion of Mr. John Hunter on the matter; Mr. J. H. told him, that he did not see how the issues could be of any service in his son's present case. After that he waited on Mr. Potts with his son, and explained the state he was in when brought to me; that he was paralytic in his lower extremities; that in three weeks after the application of the apparatus he could walk about the streets, was freed from those pains of which he before complained, and that he was three inches taller; his breast much more spread, respiration free; he could walk three or four miles at any one time without fatigue; his appetite was good, and himself in perfect health. Mr. Potts very candidly answered, that the apparatus had done for his son *all and every thing* that he ever thought or expected could be done by the issues. Respecting many particulars we here insert Mr. Stafford's letters.

Extract

*Copy of a Letter from the Rev. Mr. James
Stafford.*

“ Parkgate, Oct. 19, 1777.

“ SIR,

“ I HAVE a son, near eleven years old, who
 “ by a fall from the side of a house, about four-
 “ teen months ago, distorted his spine: the cur-
 “ vature is nearly in the middle of the back. I
 “ was advised by the Faculty to bathe him in the
 “ sea, and for that purpose brought him down to
 “ this place about ten weeks ago, and have bathed
 “ him very regularly ever since, but cannot find
 “ that he has reaped the advantages I expected.
 “ During my stay here, I heard that your spinal
 “ apparatus was made use of by a daughter of
 “ Mr. B——’s at Wrexham, and by the son of
 “ Mr. Griffiths, of Crane Street in Chester; both
 “ of whom I have seen, and had the pleasure to
 “ hear that they were much better since the ap-
 “ plication of your apparatus. Dr. Haygarth and
 “ Mr. Morrall, surgeon, of Chester, are of opi-
 “ nion that it will be of singular benefit to my
 “ boy. It may be proper for you to see the child,
 “ that you may be the better enabled to adapt the
 “ apparatus to the curvature; for which purpose I

F

“ with

“ wish you could take the opportunity of coming
“ to my house.

“ I am, SIR,

“ Your very humble servant,

“ JAMES STAFFORD.”

“ Penkridge, Oct. 28, 1777.

“ SIR,

“ I AM favoured with your letter of the 22d
“ instant, and am sorry to find that your present
“ engagement with the young lady from Church-
“ Stretton will not admit of your coming to my
“ house before the time you mention. Her case
“ is certainly a very deplorable one, and I sin-
“ cerely wish you may be of service to her. My
“ poor boy, too, is in a very melancholy situa-
“ tion ; for I can assure you it is with difficulty,
“ even with a servant holding him by the arm,
“ that he drags his legs after him (for walking I
“ cannot call it)—he has scarcely slept one whole
“ night for these four months last past, or more,
“ free from pain, either in his sides, back, hips,
“ or thighs, and often in the course of the night
“ in them all alternately ; at other times he has
“ pains in his head, and frequently breathes with
“ difficulty ; his whole body is much emaciated,
“ but particularly his thighs and legs. All these
“ unhappy complaints are owing, as we imagine,

“ to

“ to the distortion of the spine by a fall ; for be-
 “ fore he received that injury, he was as hearty
 “ and strong a boy as you ever saw. May I not,
 “ under these unhappy circumstances, hope to
 “ see you sooner than you mention ?—I would
 “ gladly bring him to you, but have some doubts
 “ of his being able to undergo the fatigue of so
 “ long a journey. Could you ascertain the time
 “ of coming down to my house, it will greatly
 “ oblige,

“ SIR,

“ Your obedient humble servant,

“ JAMES STAFFORD.”

“ Penkridge, Dec. 9, 1777.

“ SIR,

“ I TAKE the first opportunity of informing
 “ you, that my little man and I got safe home
 “ this day to dinner, and are both of us much
 “ the same as on the morning we left London.
 “ You’ll give me leave to acknowledge the civili-
 “ ties we both met with from yourself and Mrs.
 “ Jones whilst in your house. My young man
 “ desires to join in all due respect with

“ Your obliged and very humble servant,

“ JAMES STAFFORD.”

“ Penkridge, April 21, 1778.

“ SIR,

“ WE are exceeding glad to find, by your's of
 “ the 18th instant, that we may hope to see you
 “ at Penkridge very soon. You will find your
 “ patient much better than when you saw him last
 “ in many respects. He enjoys good health, and
 “ begins to walk pretty stoutly; and I see no
 “ reason why he may not in time get completely
 “ well; but I am clear he will be benefited by
 “ the directions you will give when you have
 “ seen him.—I saw your Chester patient last
 “ week: he has been exceeding ill this winter,
 “ but is now much better, and was walking with
 “ the maid servant upon the walls. I met with
 “ a gentleman who was just come from Church-
 “ Strutton; the child, he said, could walk and
 “ feed herself. Miss D——, I hear, is quite
 “ relieved of her distortion, and Miss B——
 “ greatly better. I remain

“ Your very faithful friend,

“ and humble servant,

“ JAMES STAFFORD.”

C A S E

C A S E XI.

Miss Cobb, of Feversham, twelve months old, was much distorted for an infant of that age, which Mrs. Cobb informed me was occasioned by the carelessness and inattention of a servant who was entrusted with the care of the child, by carrying her always on one arm in that idle posture, the child hanging on that shoulder, and the spine in a weak and tender state. Mr. and Mrs. Cobb, recommended by Mr. Jacob, Surgeon, of that place, brought the child to my house in August 1779 : after continuing a few days till the apparatus was prepared and fitted, he returned home, and in about eighteen months the child was perfectly restored to her proper shape. I saw her about two years after with great pleasure at their house ; and last August I was called to attend a young lady at Deal, and in my return made Feversham my way home, where I saw the young lady perfect in shape, health, strength, &c. being now eleven years since the first application of the apparatus.

C A S E XII.

Miss F——, aged fourteen, had such a distortion of the spine, that her mother informed me

she did not enjoy her health a week together, owing to the complaints occasioned by the distortion. I was recommended by Mr. Robert Adair, Surgeon to the Royal Hospital, Chelsea. She was put under my care, and placed at Mrs. M——'s boarding school at Greenwich, where I attended her; her health soon returned, and was so fully restored in about eighteen months, that few can produce a more perfect shape, or a finer picture of health; and what is extraordinary, she in that time increased in height five inches: by these means also, not only her shape, but her health was re-established.

C A S E XIII.

Miss B——, of Wrexham, aged fourteen, was exceedingly distorted, which distortion was for some years increasing; her body was very short, on account of the great double twist in the spine. When I arrived at her father's house, he declared he had not faith to believe that any man could be of service to his daughter; but as he had been prevailed upon by Lady Williams, he consented to my coming down. I desired that Mr. Lloyd, a very eminent surgeon of that place, might be present the next day, before I applied my apparatus; he was so: and that it might not be supposed there
was

was any deception, I desired Mr. Lloyd to take the young lady's height, which being done, I applied my apparatus, and extended her body with perfect ease to herself full three inches, which increased; the lungs were relieved from that contraction they had before experienced, the diaphragm from oppression, and general health succeeded. During my stay at Wrexham, I was also recommended to Miss D——, of Whitchurch, for a distortion in the spine, from which in a few months she perfectly recovered.

*Copy of a Letter from Dr. Haygarth, at Chester,
to Dr. Dobson, at Liverpool, recommending
Mr. Jones.*

“ As I know, my dear friend, that you are
“ ever attentive to every invention that attempts
“ to remove human infirmities, I recommend to
“ your attention an apparatus contrived by the
“ bearer, Mr. Jones, to remedy distorted vertebræ
“ in children. He was recommended to a gentle-
“ man's daughter at Wrexham by Cæsar Haw-
“ kins.

“ Your's, &c.

“ J. HAYGARTH,

“ Physician at Chester.”

“ *To Dr. Wholstone, Liverpool.*

“ Wrexham, July 6, 1777.

“ SIR,

“ THE bearer, Mr. Jones, is the constructor of
 “ the spinal apparatus, an instrument by much
 “ the most useful in distortions of the vertebræ
 “ of any hitherto contrived, as confirmed to me
 “ by Mr. Cæsar Hawkins, and several others of
 “ the faculty in London. On seeing the appa-
 “ ratus, I was struck with the probability of its
 “ use; in consequence applied to Mr. Cæsar
 “ Hawkins, to be farther informed of its utility,
 “ who recommended it in the highest terms.
 “ This induced me to send for him to this town,
 “ to a daughter of Mr. B——, who is so well
 “ satisfied with his proceeding, as to expect the
 “ greatest advantage from it, though the instru-
 “ ment has not been applied yet a full week.

“ This gentleman is likewise the maker of the
 “ whalebone splints, which are infinitely superior
 “ to any hitherto contrived for the purpose they
 “ are intended for.

“ In

“ In justice to merit, I can do no less than re-
 “ commend Mr. Jones to your notice ; and am,
 “ with great respect,

“ Your humble servant,

“ W. LLOYD,

“ Surgeon at Wrexham.”

“ *To Cæsar Hawkins, Esq. Surgeon to*
 “ *His Majesty.*

“ Wrexham, July 27, 1777.

“ SIR,

“ I HAVE the pleasure to inform you, that it
 “ is our opinion that Miss B—— (the young
 “ lady I did myself the honour of consulting you
 “ about) will receive much benefit from Mr.
 “ Jones’s spinal apparatus, whose conduct, whilst
 “ in this neighbourhood, gave general satisfaction.

“ Mr. and Mrs. B—— join me in thanking
 “ you for the trouble you so obligingly took on
 “ this occasion.

“ I am, SIR, with the greatest respect,

“ Your much obliged

“ and obedient servant,

“ W. LLOYD,

“ Surgeon at Wrexham.”

CASE

C A S E XIV.

MASTER J——, of Broad-street, eight years old, had a curvature of the spine in the lower dorsal vertebræ, so compressed, as to occasion a palsy in the lower limbs, whether from disease or otherwise I do not reason about, as I attended with Dr. Underwood, who had the principal management of him. This patient was in a few months brought to the perfect use of his limbs.

C A S E XV.

THE Honourable Miss S——, seven years old, of a very delicate constitution, to which I attributed the distortion, which was in the dorsal vertebræ, with the close attention of her mother and my assistance, was perfectly restored to her proper shape in the space of ten months. To this lady I had the honour of being recommended by John Hunter, Esq. Surgeon to the King.

C A S E XVI.

Miss C——, in Berkeley square, eleven years old, had been long deprived of the use of her lower limbs through a curvature of the spine, the
spinal

spinal marrow being much compressed from weakness; she was restored to the perfect use of her limbs in a few weeks, after many means, such as fomentation, &c. had been used for her recovery without effect.—I was recommended to this patient by William Bromfield, Esq. Surgeon to the Queen's Household.

C A S E XVII.

Miss M——, daughter to the Rev. Mr. M——, of St. Paul's, nine years old, was recommended to me by Mr. Olive, surgeon, at Smithfield Bars; this young lady had not only a distortion in the spine, but also the muscles of the neck were so contracted as to draw the chin round to the shoulder; but she was perfectly restored in about twenty months: electricity and fumigations had been applied without effect.

C A S E XVIII.

Mr. H——, nineteen years old, was much afflicted, owing to the great distortion of the spine, which commenced when he was three years of age, and continued to increase. The dorsal vertebræ were under the blade bone, so as not to be traced by the finger, &c.; the hip bone was covered

vered by the short or false ribs—the chest so exceedingly contracted, as to occasion great difficulty in respiration—the appetite bad. I was recommended by the Hon. Mrs. S——, whose daughter I was the means of restoring to her perfect shape : but doubting of success in this case, on account of his age and the length of time the distortion had been increasing, full sixteen years, Mr. Hunter was consulted, whether I could be of singular service in this advanced age. Mr. Hunter replied, “ That if he received not what might be wished “ for in restoring the distortion, he would be much “ benefited with respect to his health, &c. ;” and added, “ it might be a means of his living ten or “ twenty years longer, with more ease and happiness to himself and family.”—I was informed by the Rev. Mr. De Callagan that it had often given him pain, when in this gentleman’s company, to see what great difficulty he had in respiration ; the cause of which was, the capacity of the chest being diminished by the great curve of the dorsal vertebræ, which decreased the action of the lungs and diaphragm, that wonderful instrument in respiration. I attended this case about twenty months, in which time the curve was so much reduced, and the chest lengthened, that he gained four inches in height ; the oppressed viscera were relieved by the extension of the thorax ; his health, strength, and appetite were

were improved in a few weeks, and in a few months all these difficulties removed.

C A S E XIX.

THE son of Sir —, Bart. aged fifteen, was distorted; the vertebræ of the loins reclined inwards with the upper part of the os sacrum; there were no waste or decay in these bones, but a molities or softness, through weakness, as Sir — informed he was weakly from his birth: those of the ribs took a different twist; his right-hand, knee, and ankle, were also contracted. I adapted the apparatus as the case required; the curve of the spine was reduced to its proportion, and he lives in enjoyment of health and strength now in College at Oxford; the contracted hand, knee, and ankle, were also restored. Mr. John Hunter was consulted in this case.—In confirmation of which, we shall here insert extracts from two letters from his father :

“ November 4, 1782.

“ My son is now returned to Finchley, and I
 “ shall be glad if you will go there and fit him
 “ with new apparatus ; I apprehend you need not
 “ attend him afterwards, as he is so much better
 “ in his shape, that, I trust, there is little fear of
 “ his

“ his doing well, provided he pays that attention
 “ which he has promised.

“ I am, Sir, Your's.”

“ January 20, 1783.

“ As my son is so improved in health and
 “ strength he will be able to do without the appa-
 “ ratus ; I would, however, wish you to see him
 “ once more, and send me your opinion, and
 “ when I hear from you I will send you———
 “ as a reward for your services. I beg leave to
 “ add my thanks for your care and attention.

“ Your obedient servant.”

C A S E XX.

THE Rev. Mr. H—, near Doncaster, Yorkshire, seeing Mr. Potts' publication, was induced to bring his daughter up to town, who had a curvature in the spine ; the setons were applied, but before that this child could dance, &c. but after their application she stooped greatly. She was frequently leaning across chairs, &c. for ease, wanting support ; the father, struck with the idea of the child wanting support, applied to me for my assistance ; but, on inquiry, found she was under an eminent surgeon's care : I would not engage without his approbation ; but he did not approve of any other assistance but
 the

the issues. Some time after, the child not recovering from that bending state, Mr. H. informed me he had settled with this medical gentleman, and was desirous of my assistance: some weeks after which the child could walk, and in ten months, as well as most of her age, &c. the issues were healed up before. Whether this young lady was recovered by the setons, or by my apparatus, I leave the fact to determine.

C A S E XXI.

THE following case of Mr. T—'s son, of Ramfay, Hampshire, we shall give as stated by himself in a letter, dated September 13, 1783:

“ SIR,

“ By accident I heard this week of your apparatus: a son of mine, aged six years, I believe from a fall, distorted his spine; after which, three joints of his back grew out very much to the left side; I was advised to have a swing to use with his hands, but he grew worse: another surgeon advised his having two issues, one on each side the back, and to bathe him in cold water—which has been done some months; the joints of the back projecting outwards, he walks very weak, and leans much to one side; pants
“ when

“ when he draws his breath : I shall be obliged if
 “ you will say, whether your seeing him will be
 “ sufficient, or he must remain with you ; I
 “ will follow your advice.

“ Your humble servant,

“ J. T.”

I attended on this child at Ramsay, but judging it adviseable that he should be under my more immediate care, he came to my house with Master Watson, from the same town, whose case I shall relate. Master T. was with me a few days only, and returned more comfortable and easy to himself : in assisting and relieving this case was all that I expected. Mr. T. often being in town, informed me he was much improved in health, strength, and in his form ; I saw him at my house about three years afterwards, in good health and strength, and his form as well as I could expect.

C A S E XXII.

MASTER Watson, whose case was very distressing, had been gradually increasing in distortion for many months : the form of his back was like that of *plate 3d*. It appeared that several of the bodies of these vertebræ were absorbed ; he walked with his hands upon his knees : it was remarked by Mr.
 Wat-

Watson and some friends, that he could not walk from his house to the church without resting two or three times ; the distance is about 150 yards.— The first day I applied my apparatus I reduced the curve full three inches, and increased rather more his height with great ease to himself ; at the same time his breathing became pleasant to him, on account of the body being so much extended, so that the lungs were relieved from their contracted state, and the diaphragm from depression : he returned with great satisfaction to himself and friends. Not many days after, he could and did walk, run, and play with many boys of the school. This I was informed by Mr. Tarver, of Ramsay ; and in about three months after I received the following letter :

“ Ramsay, Sept. 10, 1784.

“ MR. JONES,

“ As my son's stays are now so very short as
 “ not to cover the curvature of his back, as he is
 “ increased so much in height, I beg your immediate
 “ answer to inform me what is to be done,
 “ and am, Sir,

“ Your humble servant,

“ W. WATSON.”

I have heard of this young man, at different times, being well.

C A S E. XXIII.

Miss D——, aged fifteen, was so much distorted, that part of the dorsal vertebræ were under the scapula. This lady was put under my care, with strict injunctions to pay all possible attention to her case; the recommendation came from Dr. Rowley, who also attended at different times. This lady was restored in twenty months, so much to the satisfaction of her friends, that they made me an additional gratuity. She retained her erect state when I saw her about two years after: she has been married some years.—Here I must beg leave to observe—had this lady been left to her own conduct, she would have both injured herself, as well as my reputation, by leaving off the apparatus as soon as the distortion disappeared, which is an error of the utmost moment, and ought to be avoided; for these complaints will return if we desist from the use of it before the soft bone and cartilages become firm; a striking example of which this lady afforded, whilst under cure, for being much celebrated for dancing, she was invited by a party of her friends to a ball; I visited her the day after, and was struck with her appearance; I asked the reason—she was silent; I begged she would go to the mark which I usually make to be a judge of the progress

gress from day to day, on which I found she was three quarters of an inch shorter than the day before, and the spine was so much reduced; she then informed me what she had been doing, and the mystery ceased. It is therefore highly proper for patients to subscribe to necessity, however disagreeable, more than to inclination; if they wish to reap the full benefit of this, or any other proper invention.

C A S E XXIV.

MISS F——, at Bristol, aged seventeen, in consequence of the recommendation of Mr. Townson, senior surgeon of that city, sent a gentleman to inquire of me, if, at that age, added to the time the distortion had continued, any hopes of success could be expected. I told him, that in this and all those cases it depends greatly on the patients themselves, for if they are of amiable dispositions, willing to submit to proper rules, I always find, by experience, I succeed the best; nor is my process difficult to undergo, for it does not occasion, but relieves pain. By desire, therefore, I attended on this lady at Bristol, in March 1778, under the inspection of Mr. Townson, who watched the progress.

grefs. In three months after I received the following account :

“ Bristol, June 9, 1778.

“ Respected Friend,

“ I am desired by my friend, J. Townson, to
 “ inform thee, that he thinks it time for my
 “ daughter to have new stays and apparatus. It
 “ is with great pleasure I inform thee that we
 “ think she is much better, and hope by October,
 “ which was the time thee fixed for her leaving it
 “ off*, that she may with safety. She has strictly
 “ followed thy directions, and has not left it off
 “ half an hour.—My husband and family join me
 “ in respects.

“ Thy assured friend,

“ A. F.”

“ Bristol, July 4, 1779.

“ Respected Friend,

“ My daughter has left off her apparatus ; my
 “ friend, J. Townson, ordered her to leave it off ;
 “ I deferred answering thine, not knowing whe-
 “ ther she was to wear it again or not ; I now be-

* I have found it erroneous to fix the time, for if the parts are not confirmed in that period, it is with difficulty they are got to attend after ; and as it depends on the constitution wholly, that must be our guide.

“ lieve

“ lieve she will not: she has received great bene-
 “ fit, and I shall always retain a grateful sense, and
 “ think the money well laid out, if she should be
 “ never better than she is now. I intend sending
 “ the stays and apparatus: I must desire thee will
 “ give me thy opinion whether my daughter’s stays
 “ should be laced before, as those thou made; and
 “ whether they should be as stiff behind; I should
 “ wish to have them from thee.—My husband
 “ and family are well, who join me in respects,

“ Thy assured friend,

“ A. F.”

About two years after I received the following
 letter from the young lady :

“ Bristol, June 8, 1781.

“ MR. JONES,

“ Mrs. D—— (the lady who bears this) hear-
 “ ing the benefit I received from your stays and
 “ apparatus, and having a daughter growing afe, was
 “ prompted to try it for her. I think there is
 “ great reason to believe it may be of equal service
 “ to her. I conclude with wishing it might be of
 “ equal service to Miss D—— as it was to me.

“ Your obliged friend,

“ M. F.”

C A S E XXV.

Miss D——, the lady before mentioned, aged fourteen, was with me about two or three weeks, had the apparatus properly applied : Mrs. D. well instructed in the application of it, with every hope and expectation of her recovery, returned to Bristol. Some months after I called on Mrs. D. at Bristol, in my return from Devonshire, found her daughter much improved, and a few days since, have been informed she is married and perfectly recovered.

C A S E XXVI.

Miss S—— a most amiable young lady, aged fifteen, laboured under a distortion, which had, for a length a time, been increasing, infomuch that the right shoulder was raised nearly to the ear, and the right hip apparently much larger than the left, with many unpleasant sensations from that one cause. Never had I more pleasure in attending a patient than this ; she used every effort for relief, which she acquired in sixteen months : to this lady many have been referred ; among whom was Mrs. C. who I had lately engaged with for the cure of a distorted spine : but the family
fur-

surgeon was of opinion, that it could not be effected without medical advice, and recommended the use of the vapor bath; a prescription not perfectly congruous with a relaxed habit, which was with this lady too much the case already. However, as she lived out of town, I was given to understand by letter, that Mr. ——— called at Miss ——— much dissatisfied, not having his opinion, as from the conversation held with me concerning their daughter, they felt so perfectly satisfied with what was said upon the occasion, they did not think it necessary to consult Mr. ———, if so they should have wrote up: but the young lady sent by me to see Miss S. who was under my care and wore my apparatus for fifteen months, which succeeded so well, *without any vapor bath*, was totally satisfactory to them; therefore conclude with saying, “ We wholly put confidence in you, not “ thinking any thing else necessary.

“ Your humble servant

July 21, 1783.

“ E. C.”

C A S E XXVII.

A BOY aged fourteen years, by a fall from a ship's boom, on his back, injured the spine, and occasioned a curvature; the lower limbs became paralytic: he was sent to St. Thomas's Hospital;

G 4

Mr.

Mr. Martine and Mr. Elfe, being furgeons at that time, defired I would try the effect of my apparatus, which I did ; in three weeks the boy walked about ; I have feen him play in the fquare ; he was difcharged the Hofpital well : many gentlemen that were ftudents at that time can remember the circumftance, in Auguft 1778, and bear testimony of its truth.

C A S E XXVIII.

MR. N——, of Chefterfield, whom I had before feen, when I vifited a lady of that town, who was reftored, but refufed to attend on account of his age being twenty, and the long time the curve in the fpine had taken place, namely, feven years ; he came then to London, and had the opinion of Cæfar Hawkins, Efq. &c. I being folicted by Dr. Mills, of Chefterfield, and others, to make a trial, though I had refufed before. His father being in London, found I was going to Manchester, called and defired I would make his houfe in my way, only to try what fervice I could be of to his fon ; repeated his offers as before, but as I then faid, if money had been my only object, I would have embraced it at firft. I again called, though with little hopes of fuccefs : the curve was somewhat like that *in plate the third*: the bodies of
these

these vertebræ wasted by mollities or softness, and no palsy on the lower limbs, though a general debility : I judged the spinal marrow was similar to the letter B, *in plate the fourth*, in which, Dr. Hunter observes, there was not a palsy in the lower limbs. I applied my apparatus, and left him under the care of a medical gentleman. In a month after I received a letter from Mr. N. dated June 5, 1778. *Extract*—" My son is bravely, " and has gained about two inches in height ; had " he been seven years younger, we had done every " thing." Another of June 15, says, " My son " continues bravely, and I hope keeps growing, " though we must expect that will be but slowly " at his time of life." About six months after I received another of December 21, saying, " My " son has gained three inches in height, but it " was gained all in summer * ; his chest is more " open, he enjoys health more. My family joins " in best respects.

" Your humble servant,

" R. N."

* This I observe, in general, that I can gain more advantage in summer ; when the habit is more relaxed it will more freely yield ; and also when a twist takes place in the spine, it runs with greater rapidity than in winter : so after sea bathing, I find it more difficult to recover a distortion of the spine, because the muscles are more rigid ; both these causes acting on the same principle.

CASE

C A S E XXIX.

THE young gentleman I attended at Manchester; his distortion was nearly *to plate the first*, but was more upwards. Mr. Hall, senior, surgeon of that town, and Mr. Henry, were consulted, but wishing for information from some medical gentleman of eminence in London, Mr. Henry wrote to John Hunter, Esq. who returned his answer respecting what he had seen and known from me, which gave a full satisfaction; I then being in North Wales, returned to Manchester, adapted my apparatus, and left him under the care of Mr. Henry, from whom I have received the following accounts.—August 13, 1777. “ Master R. goes on very well, he
 “ was measured without his apparatus about a
 “ week ago, and again last Saturday, in which
 “ time he had gained a quarter of an inch: he is
 “ perfectly easy with it; rides and uses other ex-
 “ ercise, &c.

“ Your humble servant,

“ THOMAS HENRY.”

He says, in another account, “ Master R. improves much in his shape, and will, I hope,
 “ do you much credit.”

CASE

C A S E XXX.

MASTER G—— near Mold, Flintshire, aged fifteen after a fever, his spine became distorted by molities ossium, and increased in the most rapid manner I ever knew in only ten months. The vertebræ of the loins went nearly in a line with the left hip: the dorsal vertebræ took the contrary twist under the right scapula; his health was much impaired; he was recommended to me by Lady Williams, and had the opinion of Mr. John Hunter. I prepared my apparatus in a few days, and raised the body full three inches the first day with perfect ease. He went from London in full expectation of receiving great benefit, as the muscles had not formed any contraction. In a few months, his father being in London, called and informed me with great satisfaction, the success of his son's health, &c. as he did the different times he came to town. About two years after, I received a letter from Mr. G. dated April 11, 1784. *Extract*—" I thank God, my son's health is perfectly and unvariably good, and his appearance as much improved as you could expect; he has not had an hour's illness since you saw him; he is out all weathers, both wet and dry. As fine
" is

“ is pleasanter for travelling, we hope to see you
 “ in town next month.

“ I am, Sir,

“ Your very humble servant,

“ T. G.

“ P. S. Mr. G. called at my house last summer, his son continues his health, strength,
 “ &c.”

C A S E XXXI.

MISS W—— of Plaſtow, in Eſſex, aged fifteen, was ſo greatly diſtorted, that her coats, &c. on her right ſide, were made three inches longer than the left, to appear tolerably even, on account of the ſpine inclining to the left ſide, which made the right hip appear ſo much larger. The ſpine being ſo much out of the direct line, occaſioned a greater diſtance between the right hip and ſhoulder than the left, which accounts for the cloaths being made longer on one ſide than the other. I have known other ladies do the ſame, in order to make their cloaths appear even. Soon after ſhe was under my care, I had the pleaſure in giving them the trouble, about once a month, to alter theſe coats until they made them even; ſhe was reſtored in fifteen months. This lady was placed
 at

at Newington-Green boarding school, where I attended her.

C A S E XXXII.

MR. E——, of Westminster, aged seventeen, had a distortion which increased in a very rapid manner: it brought on a general debility of the system, together with very alarming symptoms of approaching dissolution. I attended him with great diligence about eighteen months, under the inspection, and with the assistance of Sir Lucas Pepys, Physician Extraordinary to the King, and had the happiness of restoring, in a great measure, to his shape, &c. This case I attended about nine years ago, and upon inquiry after this gentleman a few weeks past, found he was alive and well.

C A S E XXXIII.

Miss B. aged fifteen, near Dover, in Kent, was recommended by a gentleman of that neighbourhood: coming to town soon after, he to his great surprise, saw a niece of his, who was before much distorted, so recovered, that he made inquiries respecting the means which had been used, and returned, wishing the same success in attending this lady, who came to town; in whom the spine
was

was much distorted, the right shoulder and hip greatly elevated, and the muscles surrounding the spine very rigid; the case I thought uncommon, and upon inquiring was informed she had for a long time bathed in the sea. Mr. John Hunter was consulted: however, in sixteen months she was perfectly restored, and has continued well these seven years: last summer was in an erect state. So well satisfied was Mr. B. that he made me a present of more than I expected. In this case, I was obliged to make use of the partial vapor bath, in order to relax those muscles so contracted as I supposed by sea bathing.

C A S E XXXIV.

MRS. L——, of Birmingham, being in London, and going to the Foundling Hospital, and hearing the success from the nurse, &c. who attended one of those cases, was led to consider the case of one of her children: but for better information, consulted Mr. John Hunter. She returned home and brought to town her daughter, eight years old, who had a distortion in the spine, with a contraction of the muscles of the neck: by the application of my means, with the attention of Mrs. L——, the child was perfectly restored in nineteen months: the first application was in June 1779. On September

ber 28th, I received the following account. *Extract*—" I am glad I can inform thee that Nancy
 " continues to mend; she wears the apparatus
 " as right as we can conveniently put it, and I
 " think in a little time will want it still higher,
 " as it is become now very familiar to her. I
 " should like to have thee see her as she is grown
 " a good deal out of her stays.

" I remain thy friend,

" —."

In another letter I received some months after :
 " I have been very much engaged since I returned
 " home, or I should have wrote sooner, supposing
 " thou wouldest be pleased to hear that my dear
 " Nancy goes on as well as we can expect, though
 " I must acknowledge, that the very hot weather
 " we have had, has been some hindrance to her,
 " yet, she has received considerable benefit already,
 " and I make no doubt of her being perfectly re-
 " stored in time, if we can but prevail with her
 " to wear the apparatus high enough ; but we are
 " very careful not to fret her, which is one rea-
 " son that we do not proceed so fast as we other-
 " wise might: indeed we are not solicitous to have
 " the cure performed too speedily, and shall be
 " thankful to have our desires concerning her ac-
 " complished in twice the time that was spoken
 " of.

“ of. We shall be very glad to see thee at Bir-
 “ mingham, when thou comest into this coun-
 “ try. I have so good an opinion of the excel-
 “ lent benefit that may be derived from the use
 “ of this apparatus, that I sincerely wish that
 “ all who are inclined to grow aside, had the ad-
 “ vantage of it.

“ I remain thy friend,

“ ———.”

No person could conduct things in this case,
 with more prudence than this lady did.

Another letter I have lately been favoured with,
 which is near nine years from the date of the first
 letter.

“ Birmingham, Feb. 14, 1788.

“ I HAVE long intended sending thee a few lines
 “ concerning Nancy, but many engagements have
 “ prevented me, and I had deferred so long, I
 “ was not certain how to direct a letter. We have
 “ great reasons to be thankful and I hope are so,
 “ that our dear Nancy is so well recovered: she
 “ is grown a fine hearty girl, and nobody would
 “ think she had ever been otherwise than straight.
 “ I wished for an opportunity of returning the
 “ ap-

“ apparatus, according to agreement: it lies by
 “ very safe, as no improper or ungenerous use has
 “ been made of it. I expect to be in London in
 “ a few months, and intend bringing it with
 “ me; our family are all in pretty good health,
 “ which is a great favor.

“ I remain thy friend,

“ ———.”

C A S E XXXV.

MASTER C——, aged about fifteen, from Gosport, was recommended by Mr. Pinfold, now surgeon at Maidenhead. His distortion was similar to that in *plate the third*, only higher; he came to my house very unable to support himself, with great difficulty in breathing; I was fearful of any success in this case, the bodies of some of the vertebræ being absorbed: I desired he would take the opinion of some skilful surgeon, which he did, and consulted Mr. Richard Grindal, Surgeon to the London Infirmary, who did not apprehend any matter was formed, though it was evident the bodies of those vertebræ were wasted considerably: he thought it adviseable to relieve that oppressed part, by taking off the superincumbent weight. This gentleman was with me some days before I could

H adjust

adjust an apparatus to answer any good end in such a difficult case as this, make it easy to be worn, for without that it cannot answer perfectly any purpose : I had very little hopes of success ; however, he returned home, and in two months after I received the following letter.

“ Gosport, April 17, 1780.

“ S I R,

“ I HAVE the pleasure to inform you that I
 “ have received benefit from your apparatus in my
 “ breath, appetite, and strength, and have received
 “ much in my height ; as I am with the instrument,
 “ an inch and a half higher than I was
 “ at first without it. I cannot possibly walk at all
 “ without one of the instruments, as you told me
 “ when in London ; my right hip is pretty well
 “ down. I have wrote to my uncle, and informed
 “ him what benefit I have received from
 “ your apparatus, and hope to do you some
 “ service in those parts. I conclude with compliments
 “ to your good family,

“ Dear Sir,

“ Your humble servant,

“ J. C.”

This young gentleman was at my house about a year after, to have new apparatus stays, &c.
 It

It was great pleasure to me and his friends to see him so much improved, though not so much as could be wished for.

C A S E XXXVI.

Miss B—, at Walthamstow, aged eight, when I first saw her, had the spine greatly curved in the dorsal vertebræ; three of them were apparently wasted by the projecting of the spinal processes: I feared at first this originated from disease, as there were feverish affections attendant. She could not walk, or scarce suffer herself to be removed from bed or sofa. With great exactness I prepared my apparatus, which soon produced happy effects; for this child, who could not be moved without pain, in a few months could walk, run, and romp about with most children. The following letter I received eleven months after the first application.

“ Marsh Street, Walthamstow, Mar. 2, 1781.

“ S I R,

“ I HAVE great pleasure in acknowledging the
 “ benefit my little girl has received since the 7th
 “ of April last from your apparatus; at the time
 “ it was first applied, the spine of her back was

H 2

“ greatly

“ greatly distorted, so that she could not stand
 “ upright, but leaned to her right side, and could
 “ not walk without assistance. We had the advice
 “ of two eminent surgeons, who ordered the use of
 “ the neck swing and bathing in the sea, which in-
 “ stead of making her better made her still worse ;
 “ till a lady of my acquaintance, who had seen
 “ the good effects of your spinal apparatus, re-
 “ commended the same to me : I applied accord-
 “ ingly, and, blessed be God, have found her
 “ greatly mended in every particular : she is grown
 “ strong and hearty, plays and jumps about ; her
 “ appetite is very good, she breathes easy, and as
 “ one bone is replaced, I have great hopes, that
 “ continuing your means, she will get the better
 “ of her deformity, &c. That all under your
 “ care may meet with the like redress, is the ar-
 “ dent wish of,

“ Sir,

“ Your obliged friend,

“ M. LINDSEY.”

This young lady is now at Miss Walker's (late Lamb's) boarding school, Clapton, near Hackney.

C A S E XXXVII.

Miss H——, daughter of —— H——, Esq.
 in Hertfordshire, aged fourteen, had her spine
 like

like that described *in plate the first*, only more distorted upwards; she being a slender, delicate, lady, and the distortion having not long taken place, I concluded there would not be that difficulty in restoring this, as in those where defects have continued for a length of time; my conjecture was right, for this lady was soon perfectly restored: this was in the year 1780. I have made her stays several times since;* the last was last summer: she still remains in a perfect state. I was recommended by Mrs. H. whose son had been under my care, aged 19 (see Case 19).

C A S E XXXVIII.

Miss S——, aged fourteen, of Nottinghamshire, came up to London to take the opinion of some medical gentlemen concerning her shape, which was much distorted, occasioned by weakness after a long illness, and was so relaxed, that the spine was not able to support the weight of the head. Being very unhappy on account of it, I was recommended by Mr. John Hunter, and the possibility of success confirmed by Mrs. M. a lady of

* Those ladies who favour me in making their stays, give me an opportunity of assisting to maintain an erect form, &c. &c.

character, who had seen the good effects, in a similar case, also advised, that this young lady should be placed in or near town, where I could have frequent opportunities of attending to the means used ; she was placed at Mrs. Cookrall's school, White Lands, Chelsea, as parlour-boarder there, to enjoy the opportunity of finishing her education, at the same time to attend to the recovery of her shape, to which she made close application, which was effected in about twelve months : afterwards she went to bathe in the sea, which confirmed and established her in that state. She remains so, as I was informed by a lady some months ago, who came from thence.—Note, this young lady was truly sensible of the defect in her appearance, as also in her health.—Bathing in the sea, when the defect is restored, is perfectly consistent, because that part of the spine which was diminished by pressure, cannot be so firm as those parts not affected : it is necessary therefore that every means should be used to strengthen it.

C A S E XXXIX.

MISS R——, eight years old, daughter of C. R. Esq. of Litchfield, who brought the lady to London, recommended to me by a friend of hers. The distortion was similar to the two former : the tender
years

years of this child, and the twist not being of long standing, gave very favourable prospects of her being restored. I have had some letters relative to this subject, but by some means they are mislaid; therefore I can only say, Mr. and Mrs. R. came to meet me at Worcester some months after, where I had the pleasure in seeing this child much improved, and acknowledged by them.

C A S E XL.

Miss M——, at Knightsbridge, aged about seven, was extremely ill, wasting away through the distortion, principally in the dorsal vertebræ, so that she was thought fast approaching to her end as in a decline: so serious was the case, that preparation was making for her going to bathe in the sea as the last resource, when Mr. Jackson, an ingenious surgeon at Knightsbridge, who was consulted, not willing to rely wholly on his own judgement in so critical a case, called in the assistance of Mr. John Hunter, who immediately advised that I should be sent for. I applied my apparatus; the recovery was progressive; that in a few months her proper shape and her health were established. I have made her stays ever since; I saw her a few months past, and Mrs. M—— informed me she has continued in perfect health these six years.

C A S E XLI.

DR. KERR, of Northampton, brought a young lady, aged fifteen, to London, to take the opinion of Mr. John Hunter upon the distortion of her spine. Mr. Hunter recommended the Doctor to me: I prepared the apparatus, and applied it, much to the Doctor's satisfaction: after fourteen months application, the young lady was restored, of which I received information from Mrs. Trinder, governess of that valuable boarding-school at Northampton.—I was applied to by a lady, who consulted me in a distorted case of her daughter, who heard of this case from Dr. Kerr; and knowing the Doctor, was induced to write for his opinion, which the Doctor gives, in a plain manner, as follows:

“ Northampton, March 13, 1785.

“ DEAR SIR,

“ JONES certainly was of great use to —,
 “ who is now perfectly straight, and has long
 “ ago left off the use of the instruments which he
 “ recommended and made. I think he is a judi-
 “ cious clever fellow in his business, and adopts
 “ his instruments upon rational sound principles,
 “ having

“ having studied anatomy under Dr. Hunter, to
 “ enable him so to do. I am,

“ Dear Sir,

“ Your’s, &c.

“ W. K E R R.”

C A S E XLII.

Miss C——d, twelve years old, of an exceeding delicate constitution, which had occasioned a distortion of the spine, from the recommendation of Mr. John Hunter, and Mr. Adair, surgeon in the City, was put under my care: having had opportunities of making her frequent visits, and the young lady being of an amiable disposition, she was perfectly restored in the short space of eight months, inasmuch, that her two aunts, with me, examined her: I asked which side the spine then inclined to, which they could not tell. This shews that a close perseverance in the use of the apparatus, and a strict adherence to the instructions given, serve greatly to expedite the cure. After this time, she went to bathe in the sea to brace and strengthen the habit, in order to prevent the danger of a relapse.

When

When at Margate, I received the following letter from this young lady :

“ As I understand by my aunt you were desirous
 “ of knowing how I was, and how bathing agreed
 “ with me—I now do myself the pleasure of in-
 “ forming you, that I am much better than when
 “ I left town. Bathing agrees with me very
 “ well, and I like it exceedingly ; and, to my
 “ great satisfaction, I wear my apparatus but half
 “ the day. You cannot think how I pitied a
 “ young gentleman whom I saw with it on yef-
 “ terday, and, I make no doubt, is one of your
 “ patients as well as myself. My aunt desires her
 “ compliments ; and if you chance to come to
 “ Margate, we shall be very happy to see you.

“ I am, Sir,

“ Your humble servant,

“ A. C.”

The young gentleman spoken of above, was one I was the means of restoring : but after the spine was erect, not continuing the apparatus for a sufficient time, and by letting the incumbent weight fall too early on those tender parts, it in some measure fell back again : like some others, who thinking all is well, when restored, and not considering that it is some time before nature can be re-established,

which

which depends upon the constitution, as she may be assisted, but cannot forced beyond her proper limits.

C A S E XLIII.

THE following letter is from a Lady at Bright-helmstone :

“ June 27, 1783.

“ MR. JONES,

“ Having heard from Miss G—— that you perfectly recovered the shape of a Miss C——d, (the lady before mentioned) I wish you to see a young lady that lives with me ; but as I am now at Brighton, I do not chuse to send her to town till I know how long it will be before you can make the apparatus ; how long it is necessary for her to stay in London ; and also to know the whole expence. I request you will inform me if the young lady's age, being fifteen, is too old to use the apparatus with any hopes of success ; she is slight made, and appears younger than she is.

“ I am, Sir,

“ Your humble servant,

“ M. B.”

This

This young lady came to town. On my examining her, I found the twist in the spine similar to *plate the first*, only higher : being of an amiable disposition, her mind entirely bent to give all attention to the recovery of her shape, she was placed near Islington for the advantage of my attendance. This lady was perfectly recovered in twelve months. Mr. B. would have no medical Gentleman to attend.

C A S E XLIV.

Miss P——, of Walworth, five years old, had a distortion of the spine, occasioned by a relaxed habit; her head remarkable large and heavy, the weight of which being too great for the spine in that weak state to support, reclined, and formed a double twist. This lady was recommended to me by Mr. Evans, surgeon, at Knightsbridge. I adapted my apparatus with great attention, until she was so well, that my further attendance was not thought necessary.

C A S E XLV.

A SON of Mr. Martin, in Clarges-street, about eight years old, with a distortion of the dorsal vertebræ, had the bodies of the fifth, sixth, and seventh

seventh, through weakness wasted by pressure ; so that the child for support used to lean on the chairs, tables, &c. and in walking fixed his hands on his knees. I applied my apparatus, and in a few months the child could walk and run about as well as most boys of his age, having great spirits : I have often stood with pleasure to see this child running with such activity at play : this child is well known in that neighbourhood. He was one summer with me at Margate, bathing in the sea, as there was not then, nor has been since, any appearance of disease ; and it is now six years since my attendance on him.

C A S E XLVI.

Miss Boison, in Spitalfields, aged thirteen, was of such a relaxed habit of body, occasioned by a fever, that the spine became distorted, and her chin, by a contraction of the muscles of the neck, was drawn near to the right shoulder ; many means had been used for her recovery without effect. I was applied to, and in about thirteen months she perfectly recovered ; inasmuch, that I called about two years after, and I was not able to discover the least defect, either in the spine or in the neck. I was recommended by Mr. Chastellier, surgeon, in Spitalfields.

CASE

C A S E XLVII.

Miss B. daughter of the Rev. Dr. B. in Kent, aged thirteen, who inquired of several friends of the success which attended Miss B. near Dover, in the recovery of the distortion, (Mr. Dray, surgeon, of Dover, attended that family, see Case 33d.) being satisfied, came to London, and was encouraged to apply to me; but taking the opinion of Mr. John Hunter, this lady was put under my care whilst she remained in London, and returned home with proper instructions, by which means the distortion of her spine, which was in the dorsal and lumbar vertebræ, was removed. Six months after I received the following agreeable letter:

“ Mr. JONES,

“ I have no doubt but you will be glad to hear
 “ from me that Miss H. B.’s shape is much im-
 “ proved since she put on your spinal apparatus;
 “ but as we think of taking her to the sea in the
 “ month of September, we wish you to see her
 “ before that time, that we may know whether
 “ you will then approve of her bathing. Dr. B.
 “ and I, therefore, wish to see you whenever it is
 “ convenient. She is now raised up 32 degrees, and
 “ bears

“ bears it very well. Dr. B. desires his compliments.”

“ I am,

“ Your humble servant,

Aug. 3, 1784.

“ S. B.”

C A S E XLVIII.

Miss B——d had a distortion of the spine both in the dorsal and lumbar vertebræ, insomuch, that her health was greatly affected. Her mother being at a friend's house, was asked the welfare of her family, and expressed much concern and unhappiness about her daughter: she was recommended to me by a gentleman then present. I attended this young lady at Mrs. Rogers' boarding-school, Mile End, and in about twelve months her shape was restored, and her health in a few weeks recovered.

C A S E XLIX.

MASTER Stewart, from the East Indies, aged fifteen, of a very relaxed habit, was greatly distorted in his spine, insomuch, that the left hip was eclipsed by the false or short ribs; the dorsal vertebræ

tebræ under the blade bone occasioned great difficulty in respiration, with frequent pains in his head, &c. : he was put under my care, and I was enabled to extend the spine three inches in the first week, which removed the pains in his head, &c. and gave him ease in respiration : he continued increasing in height, in proportion as the twist of the spine was reduced ; but his father dying in his passage home, this young gentleman was sent for to Scotland, and I have not heard of him since that time.

C A S E L.

MASTER D——, from Glasgow, aged thirteen, was recommended to me by a lady who had been under my care, and had recovered. This young gentleman was also put under my care by his uncle, Mr. H. The muscles of the neck were contracted, and a distortion of the vertebræ of that part. In twelve months he was restored ; it had not been long standing, hence the cure was the more easily accomplished.

C A S E LI.

MASTER D——, near Bishopsgate Church, five years old, had a curve in the dorsal vertebræ ;
the

the spinal marrow being compressed, occasioned great pains in the thighs and legs ; what little he did walk was with crutches ; he had been for some months oppressed with difficulty in breathing, occasioned by that part of the spine being shortened by the absorption of the bodies of these vertebræ diminishing the thorax ; hence the lungs were compressed, and the diaphragm depressed. On examination, it did not appear to me that the vertebræ were carious, or that matter was formed ; still it was highly necessary to relieve the spine, by taking off the incumbent weight : he was put under my care, and in three weeks he walked, had no more occasion for his crutches, the difficulty in breathing was removed, he increased in health and strength, and in a few months ran about. I saw him a few days ago ; continues in perfect health, being three years since the first application of my apparatus.

C A S E LII.

Miss B——, from Glasgow, aged thirteen, whom Mr. and Mrs. B—— brought up to London in April 1785, in full expectation that I should be of singular benefit to her, though she had taken the advice of the most eminent medical gentlemen in those parts. The case was a contraction of the muscles of the neck, so great as to draw the chin

to the right shoulder, and even to affect the face with a distortion. The muscles were very rigid, and so much contracted, that the glands of the fauces could not be felt by the finger. In this case I had recourse to other means besides the apparatus. The young lady was placed at Mrs. Hockley's boarding school, at Blackland's, Chelsea, for the accomplishment of her education, as well as to take the benefit of my attendance. In six months the muscles were duly relaxed, so as to take their natural situation. The neck is now of a proper length, &c. About eight months after I received the following letter :

“ Glasgow, Dec. 28, 1785.

“ DEAR SIR,

“ As I have never yet had the pleasure of hearing from you since my getting to Scotland, I shall now be happy to learn from you the true state of my daughter's neck and prospect of recovery, together with the time you think it will take to effect a cure. I have received from different people various accounts as to her getting better ; but it is you alone I wish to trust to : you have now had her about eight months under your management, and I vain hope by this time you have got to a tolerable degree of certainty, both with regard to the extent of cure to be expected, and time it will take. When
“ you

“ you write be pleased to say what are the alterations that have taken place in her appearance :
 “ if the neck has lengthened, if the chin has assumed more its natural situation, and if the great cavity between the two mastoideal muscles is filled up. I beg you’ll not only be particular, but open and candid concerning her. Mrs. B—— joins in best compliments to you.

“ I am, dear Sir,

“ Your’s,

“ A. B——.”

For the greater satisfaction I took a medical gentleman with me to see this young lady at Chelsea, before whom and with the governess I took the dimensions as stated in my answer to Mr. B. here inserted :

“ London, March 4, 1786.

“ I am favoured with your’s of the 28th of December last, but thro’ multiplicity of business I have been prevented from transmitting to you every satisfactory information concerning your daughter. Miss M. B——’s chin has assumed a much more natural situation ; the muscles have certainly stretched at least two inches and three quarters in length, as you’ll see by the inclosed account, which I took be-

“ fore Mrs. Hockley and Miss B—— last
 “ night; the curvature which was actually form-
 “ ed in the vertebræ of the neck and upper dorsal
 “ ones, is wholly removed. From what I have
 “ related you will easily conceive, that the cavity
 “ below the pomum Adami cannot be near so
 “ large as it was; she has free motion with her
 “ head, so as to turn the chin to either shoulder
 “ with ease; the neck is long; the shoulders
 “ fall low, and are genteel; the muscles of the
 “ face are much improved; and I am so happy in
 “ the success by the means used, that I could
 “ wish you to have a drawing of her present
 “ figure.—It is impossible to ascertain the time it
 “ will take to effect a perfect cure; but rest as-
 “ sured, my utmost efforts shall be exerted. I
 “ am, with compliments to Mrs. B. and yourself,

“ Your obedient humble servant,

“ P. JONES.”

C A S E LIII.

A POOR boy at Knightsbridge was by accident
 rode over by a gentleman; the hurt he received
 caused an incurvation of the spine, and a palsy of
 the lower limbs; he was attended by a medi-
 cal gentleman, who applied causticks, one on
 each side of the spine, for a long time without
 any

any effect : at length he was admitted as a patient into St. George's Hospital ; the medical gentlemen used the same means, by applying two causticks near to where the others had been : he continued in the hospital several months, but to no purpose, and afterwards discharged ; he remained at home some time, but his parents being poor, he was admitted into the Westminster Infirmary — the medical gentlemen applied two more causticks just above where the others had been, when, after several months trial, he was discharged uncured, having no use of his limbs. His father working at Mr. Smith's manufactory at Knightsbridge, Mr. Smith desired me to go and see the boy. I saw where the drains had been made by causticks, agreeable to his mother's relation ; he complained of great pains in his thighs, &c. I applied my apparatus, which in a few days removed those pains ; but he was many months before he recovered strength enough to walk about. I saw him some time past in company with some other boys, and thought he walked as well as his companions. This was more than two years after my first application.

C A S E LIV.

Miss M——, daughter of the Rev. Mr. M——, aged fifteen, applied to me with a distorted spine in the loins and dorsal vertebræ in the manner before described. Perseverance and great attention in this case even exceeded my expectation in the recovery of her shape.

C A S E LV.

Miss C——, aged near three years, of a relaxed and delicate habit of body, had from this cause a distortion of the spine. The form or figure of her body alarmed the parents and friends, who attributing it to different causes, consulted Dr. Denman, by whom I had the honour of being recommended. In examining the child, I perceived the bones very soft, particularly in the fore part of the ribs, they not having sufficient strength to form that agreeable arch which nature intended to permit the free action of the lungs and heart ; hence was the chest contracted, which happens generally in weakly children. She was put under my care, and with great attention being paid to her, in eight months she was perfectly brought-strait, and still continues in her improved form.

This

This lady being so young, and the distortion discovered early; rendered it more easy to be removed. She was afterwards taken to bathe in the sea, which greatly contributed to prevent a relapse, and maintained her form erect.

Four young ladies and a gentleman I attended under the inspection of Mr. Farquair, an eminent surgeon, for a particular account of the success in these cases, I shall beg leave to refer my readers to that gentleman, who had the opportunity of frequently seeing them.

Besides the cases I have inserted, a great number more might be placed here, but as they are similar, it would be swelling the catalogue only to little purpose, to enumerate the various others, which have come under my care; and in which I have had my endeavours crowned with success. But it may be asked perhaps if all distortions can be cured by these means? I wish I could answer in the affirmative, but I cannot; there are many impediments present themselves to retard our progress; particularly is perverseness and obstinacy of temper; an instance of which appears in the subsequent case.

A young lady, Miss W——, aged fourteen, whose spine was very much distorted, had the chest contracted, the lungs oppressed, and the diaphragm depressed, which in respiration occasioned a shortness of breathing; her health was bad in general. The first day I applied my apparatus, the bones, cartilages, &c. were in that soft relaxed state, that I extended the body full three inches in height, with perfect ease to herself; as she observed, she could now see herself in the looking glass, which before she was not able to do, on account of her low stature. She soon found great relief in respiration and in health, and was perfectly satisfied with her appearance, but could not be prevailed upon to pay that attention requisite for her full recovery, notwithstanding every argument which was used; and Mr. Hawkes was so obliging as to see her attend, and prevent the apparatus from giving any pain. I was favoured with the following letters from Mr. Hawkes:

“ Reading, October 16, 1783,

“ S I R,

“ I HAVE put the second apparatus upon Miss
 “ W——’s stays, and think her shape is im-
 “ proved, and her health much mended. I am
 “ with her three hours every morning, that I
 “ may see her sit properly, and am in great expect-
 “ tation,

“ tation, from the letters she has received both
 “ from her uncle and father, that it will be at-
 “ tended with some salutary effect, as they en-
 “ deavour to imprint on her mind the ill conse-
 “ quences of her late erroneous conduct, with
 “ respect to her future advancement and welfare
 “ in life. I have made her sensible at the same
 “ time, that she has nothing to hope or expect
 “ from me, but from her compliance with what
 “ is so essential to her ; and hope by the blessing
 “ of God for success.

“ I am, dear Sir,

“ With much esteem,

“ Your obliging humble servant,

J. HAWKES.

“ Reading, Nov. 17, 1783.

“ DEAR SIR,

“ Miss W——’s apparatus is extended to the
 “ utmost ; I think her much improved both in
 “ health and person ; I wish I could say it was
 “ with her own assiduity ; however, one day or
 “ other, she may see things with greater pro-
 “ priety, and gratitude may incline her to ac-
 “ knowledge so great a blessing with thankfulness.
 “ I imagine we shall have the pleasure of seeing
 “ you

“ you soon with another apparatus. Mrs. Hawkes
 “ joins me in compliments, and am,

“ Dear Sir,

“ Your most humble servant,

“ J. HAWKES.”

The following letter is from this young lady's
 father :

“ DEAR SIR,

“ NOT having lately heard from Betsey, we
 “ are very anxious to know how she goes on ;
 “ it is now upwards of twelve months since we
 “ put her under your care, and it would be a
 “ very great relief to our minds to know whether
 “ there is or not, any progress towards improve-
 “ ment, &c. A line from you will be more sa-
 “ tisfactory than the representation of any other
 “ can possibly be ; and the sooner you favor us,
 “ the sooner we shall be at ease. My wife joins
 “ in respects,

“ And am, Sir,

“ Your humble servant,

“ H. W.”

Notwithstanding all that could be said or done,
 I could not prevail on this young lady to persevere ;
 she

she enjoyed her health and would not brook restraint. The case of such children I should ever wish to decline, as it occasions uneasiness of mind, an injury to reputation, and fruitless expence.

Similar to this lady, I had two sisters at one time placed under my care, in my house, who boarded with me, by the particular desire of their parents; I could recover the distortion of their shape, but not regulate their tempers, so perverse were they; and if the mind is not well inclined, little good can be expected; these ladies returned little benefited: some others have gone on, I have known, very well for a time, till health and strength being restored, and ease in respiration, but not admitting time for the parts to become firm, they sink down again, and then blame the remedy as ineffectual. But there are some cases arising from particular causes, that are difficult to conquer, and often baffle the utmost exertions and closest attention. I mean those deducing their origin from a scrophulous habit: in these the spine will yield, and bear to be raised up as in others, but the softened vertebræ will not ossify, or become firm, as in those where the distortion is from relaxation alone in delicate habits; besides, I have observed similar difficulty arises in the cure of distortion in the offspring of aged parents; these are always tedious,
and

and take up much longer time completely to terminate the affection.

I have one young lady now under my care, this being the fourth year, for a distortion occasioned by mollities ossium of a very soft texture, herself of a delicate habit of body (she was the last child of several others born of aged parents). The distortion was of that species with the double twist; the lower vertebræ reclining towards the left ilium; the dorsal to the margin of the right scapula. At first I succeeded so well, that in about ten months, she was apparently straight, to the great satisfaction of her friends, &c. I entreated still the continuation of that attention for a length of time, till the parts had required strength and firmness, convinced the delicacy of her frame would require it. This family retired into the country, and exposed to much company, the young lady prevailed on her mamma to let her leave off the apparatus. In about eight weeks they returned to town; the young lady had lost ground, it was attended to therefore again, till the next holidays: her appearance was then pleasing, which tempted her to leave the apparatus off again. It appeared that nature was niggard in offering assistance, and as medical gentlemen were consulted, I ceased to interfere with giving directions relative to

to strengthening the habit. Last summer the lady took the opinion of Mr. John Hunter, who ordered her during the vacation to bathe in the sea; by which, and the advantage of the sea air, (which I would recommend to all before they leave off the apparatus) her constitution is greatly strengthened; the bone and muscles are firmer, and she now makes a very genteel appearance; the shoulders being perfectly even, the chest wide, and back flat; with the blessings of God, I have no doubt, but with a few months more close attention, till the season for sea bathing returns, and repeating the same regimen again, the parts will be so strengthened, that no relapse will ensue. The difficulty in such cases is not so much to remove the distortion, by bringing the spine straight, but to keep it so, by using every means to strengthen the constitution; which in some will happen in the short space of nine or ten months; while in others much longer time is necessary.

I had the care of another lady, whose cure I thought fourteen or sixteen months with care and attention would complete, but finding the spine had not acquired that strength and firmness which was wished for, in that time, the parents and friends desired my further attendance till the spine was confirmed in strength, &c. This was
giving

giving a fair trial, the reward of which I hope will be successful.

A lady in Devonshire, whose father was much in years, hearing of the case of Miss F——, at Bristol, (*Case 24.*) was highly pleased with the prospect. I left her under the care of Mr. Tippetts, an eminent surgeon of Barnstable, from whom I was favoured with the following account :

“ SIR,

“ I am requested from Mrs. C——, to inform
 “ you that Miss C—— is increased in height
 “ twelve degrees, (*i. e.* about an inch,) and in my
 “ opinion in the long run, she bids fair to receive
 “ great benefit from your apparatus ; they have
 “ hitherto increased one degree per week, but pre-
 “ suming it may be over done, I desired they
 “ would not proceed so rapidly, as the vertebræ
 “ of the neck seem to be too much extended.

“ I am, Sir,

“ Your most humble servant,

“ HENRY TIPPETTS.”

In this case the whole spine was in a very relaxed state, and as those of the neck are the smallest, they more easily yield in extending the body.

body. Here the difficulty was not to bring the spine straight, but time and patience were required to keep it so; and every means used to give strength to the habit: and here I shall observe, that there is a necessity at a distance, to have a medical gentleman to visit occasionally, for the apparatus alone will not always be sufficient; medical applications and attention are sometimes requisite: all cases are not to be treated alike, nor will the apparatus made for one do for others.—Two months after I had applied the apparatus, I received a letter from Mrs. C——, Dec. 20, 1779, wherein she says, “ Mr. Tippetts thinks the child is better; all the change that I see in her is, that the small ribs are filled up a good deal, consequently the left side don’t appear so full as it did: she is much fatter than she was, and her appetite extraordinary good; she eats hearty to what she ever did: upon the whole she has gone on surprisngly well, and every direction has been observed; only that we could not bathe her, as she got cold soon after you left this. I am with Mr. C——, my sister, and Mr. P——’s compliments,

“ S I R,

“ Your most obedient

“ humble servant,

“ M. C.”

What

What more could be expected in two months than what is here acknowledged? however, in twelve more I received the following letter :

“ January 20, 1780.

“ MY sweet darling child's apparatus fits, and
 “ she appears quite easy; I hope and think she
 “ is better; I have high expectations of an intire
 “ cure in the course of time; and am in hopes
 “ you may be called to this side of Exeter: I have
 “ spoke of you in the strongest terms. Mr.
 “ C——, with my sister, Mr. P——, the chil-
 “ dren, and Miss G——, join me in compli-
 “ ments to you,

“ And am, S I R,

“ Your obedient

“ humble servant,

“ M. C.”

However, as cases of this kind occur, and those not rarely, where children counteract every good effect of the means used, by a wayward disposition, which neither advice, threats, nor punishments can conquer, it behoves those who have the care of children in earliest infancy, to attend to modes promising to prevent distortion, which certainly may be adopted and with success; by
 avoid-

avoiding the errors too constantly pursued in nursing, or originating from parental indulgence too frequently.

In the pursuit however of which salutary plan, air, exercise, and ease, with proper diet, constitute the principal requisites; in the management of which depends the great probability of certain success.

Children therefore should have plenty of fresh air, and exercise in proportion to their age, whilst in the nurse's arms; and when at home be suffered to lie on carpets, &c. and induced by proper temptations to move themselves from place to place, by such means as nature will dictate: not put upon their legs too early, dragged about by leading strings, nor cooped in go-carts; for by these inventions, children attempt to stand too soon, before the spine, and bones of the pelvis and lower extremities, have sufficient strength to bear the superincumbent weight of the head, and superior parts of the body: hence too often arise various distortions of the legs, back, &c.; all which, were the means pursued which we advise, would be prevented; for not only the body would receive strength by air and exercise, but the spirits would be exhilarated, and the mind, by being

K

per-

perfectly at ease, amused, and the attention kept awake. The diet should be chiefly milk, of all the best, now and then varying it, by giving other succulent and nutritious viands, and in moderate proportion. Nurses are apt to cram their children too much, and hence, from this cause alone, lay the foundation for future disease; by weakening the digestive powers, and generating crudities in the primæ viæ, by perpetually surcharging the tender bowels and stomach with loads of food. Children should be often fed, but the food given should be in small quantities, and at proper intervals. If these rules were observed, we should have, I believe, few crooked children; for we should by these means leave nature as much as possible to her own operations, who left to herself never creates deformity; look amongst the uncivilized part of the creation, how rare is it to see a crooked negro; and wherefore? they have no back-strings, go-carts, idle nurses, nor ridiculous mothers; they feed not on the luxuries of art, but simply taught let nature move in her own sphere unmolested. Before I conclude, however, I must make one observation; that the distortions by whatever means acquired, are easily discoverable, yet sometimes the incautious may be deceived; for in some cases there is only an appearance of distortion, which is transient, and rather depends on the particular attitude

titude of the child at that moment, than in any defect of nature: but this has though, often given cause of alarm to the anxious parents. I have often observed that such appearances seldom take place but where the habit of body is very weak and delicate; yet, without great attention, often distortion; from which many have been saved by early care; and in several cases of this kind Mr. John Hunter has been consulted: he recommended them to me, to make stays on such a construction, as that they might support the body with perfect ease to the child; at the same time ordered them to bathe in the sea for six or eight weeks, and that, with the sea air, has proved effectual, and totally remedied the complaint.

Miss P——, recommended by Mrs. L——, and Mr. Minors, an eminent surgeon at Birmingham, was brought to me by her father, who put her intirely under my care. Upon examining this apparent distortion of the spine, I perceived the case was not truly such, but only occasionally occurred, when she stooped to one side, then from the bending of the spine, the right os ilium appeared more prominent; but desiring the child to put her heels close together, turning the toes outwards, bearing equally on each foot, and standing erect, I could not perceive any defect;

but in standing on the left leg, and putting the right a step forwards, I saw the os ilium had that elevated appearance as before ; and in bending the body also forwards, to have a clearer view of the spine, I found it straight : I thought it therefore not advisable to apply any apparatus, wishing her father rather to take the opinion of Mr. Hunter, who upon examining the child, in putting her in different positions, did not perceive any distortion, but great weakness, and would not advise the application of any apparatus at that time, but begged the favor of Mr. Minors' attention to her, recommending every means to strengthen the habit by cold and sea bathing, and sea air. Besides, I have remarked wherever there is no distortion in the spine, but only an appearance of it in stooping or bending forwards, there the chest is frequently narrow ; the ends of the ribs which are united to the sternum being cartilaginous, are elevated into small protuberances ; which are nearer to each other in this posture, than where the body is erect ; and this will be in proportion to the bend, which I have observed to be in the dorsal vertebræ. In these cases where the spine takes this form, I have seen good effects from well-made stays, formed to fit very flat to the back, of some substance, and left full and easy round the chest, with a proper back and steel collar, to bring the head into its erect

erect position by degrees: the stays are to press on that part of the back which appears curved: the straps are by degrees to bring the shoulders backward, which will expand the chest and relieve the parts depressed; while the collar brings the head perpendicular. This was the case of Lady C. G——, daughter to his Grace the Duke of G——, who came from Scotland in so awkward a form that it was remarked by some ladies, she looked as if she had carried the yokes, &c.: her chest was narrow, and her shoulders broad, but yet, herself in perfect health. I made a collar on an improved plan, which in three months so restored the state of the young lady, that she lost totally all unpleasing appearances.

From what has been offered in the foregoing pages, we see what prodigious disadvantages and evil consequences accrue from distorted spines; and though the greatest number may be remedied by the simple apparatus I make use of, still prevention is infinitely more eligible than cures however easy and certain; which may generally be accomplished by taking proper care of children in the early part of life; particularly in those who are of weakly and delicate habits, by keeping them in erect postures, by affording support to the spine, such as they can bear with ease, and will not impede

activity or motion, or occasion them to acquire a disagreeable stiffness in their manner: and this intention will be best answered by making them wear stays judiciously adapted to their form, occasionally altered, as necessity may point out. On these considerations, I therefore offer my service to the public, and will, where there is no real distortion, undertake to supply ladies with one pair of stays, and a collar, made under my own inspection, and where a collar is not wanting, two pair of stays annually, and visit them at least twice a month, standing to all necessary repairs, for five guineas per annum,

For

For the more readily referring to particular cases with their causes, we have annexed the following table.

Incurvations of the spine from absorption, or waste of the body of the vertebræ.

	C	A	S	E	S.
No. 1			16		28
3			20		35
6			21		36
7			22		45
9			27		51

Incurvations of the spine from accidents.

	C	A	S	E	S.
No. 10			27		53

Incurvations of the spine from supposed caries of the bones.

	C	A	S	E	S.
No. 2			8		14

Incurvations of the spine from contractions of the muscles of the neck.

	C	A	S	E	S.
No. 17			50		52
46					

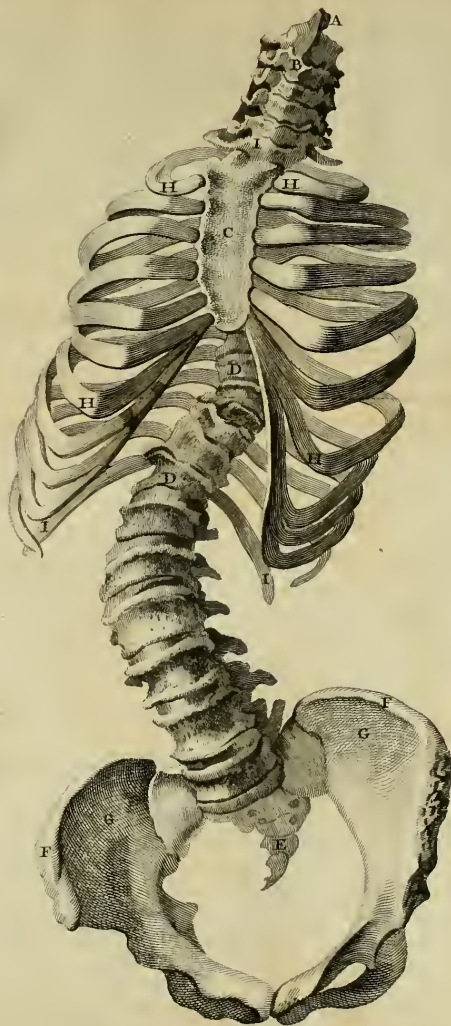
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Incur-

*Incurvations of the spine from mollities ossium, or
softness of the bone.*

	C	A	S	E	S.
No. 4			26		41
5			29		42
11			30		43
12			31		44
13			32		47
15			33		48
18			34		49
19			37		50
23			38		54
24			39		55
25			40		

Fig. I.



P L A T E I.

A Description of a Distorted Spine, from the Collection of the late Dr. Hunter, by Permission of the Executors, Dr. Pitcairne and Dr. Combes.

FRONT VIEW.

THIS spine has the general appearance of those which are commonly met with, having a double curvature, and shape of an inverted S: this is from an adult, who seems to have possessed a much stronger constitution and longer life than is usual in those cases; for the bones are deeply impressed by the attachment of the muscles; the spines of the ilium are rough and scabrous, and the os inominatum is thin, and nearly transparent from absorption of the bone. The chest is thrown backward by the standing forward of the lumbar vertebræ, and by this particular twist of the spine, the margin of the chest is removed to a greater distance from the ilium than we commonly find it, even in those who are well shaped: so that in this case there is all the room for the viscera that nature could wish to carry on her functions. We find that the vertebræ are in general larger than common, also the intervertebral spaces broader.

We

We see also in this, as in general, that whenever the spine begins to recede from the right line of support, there the superior vertebra sends out osseous matter, to join by a callus with the inferior vertebra, by this means forming a stronger union, and assisting to counteract the weight that is thrown to the opposite side. Here nature endeavouring to help herself with regard to the unequal thickness of the intervertebral substance, wherever it is most compressed it is thinnest, and where there is little or no weight upon it, thickest. The ribs in this subject have not that acute angle, nor are so much distorted as in some; these are only displaced by following the distortion of the spine.

PLATE

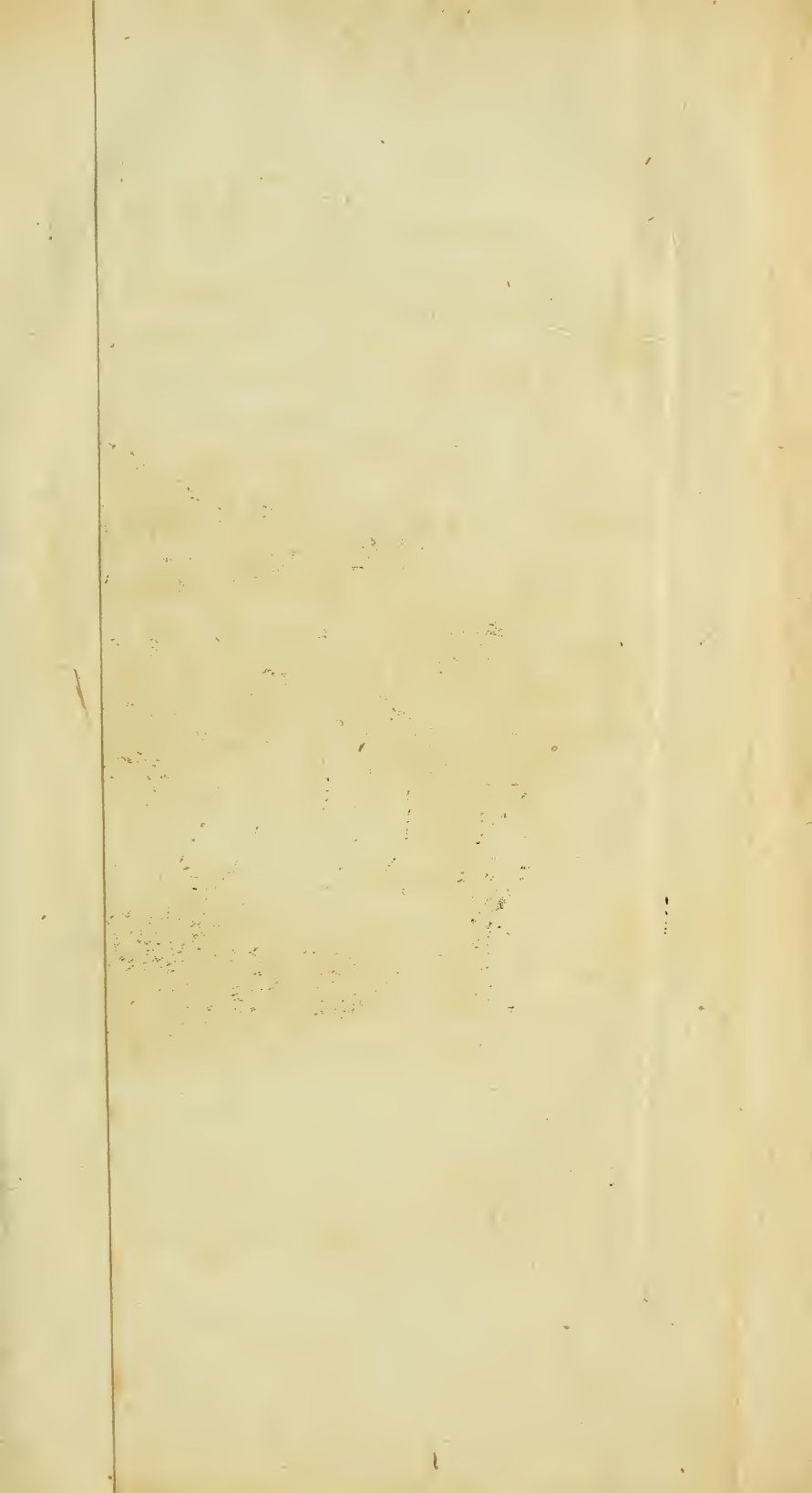
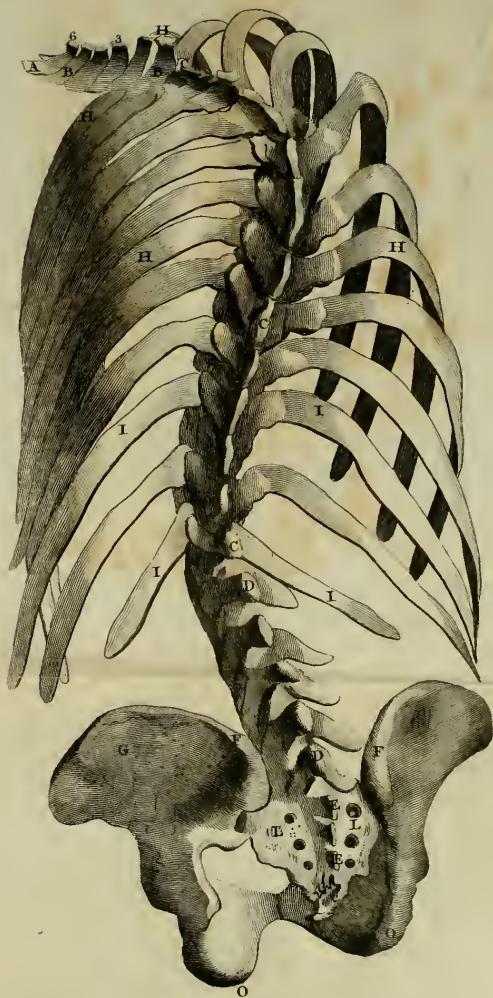


Fig. II.



P L A T E II.

A Description from a Distorted Spine, in the Anatomical Collection at St. Thomas's Hospital, by the Permission of Mr. Cline, Anatomical Lecturer.

B A C K V I E W.

THIS accords with the general class, from the mollities ossium, or softness of the bones, from constitutional weakness, but in this respect varies: that the curvature is not from side to side as most of this class are, but the curve is forwards, sideways, and backwards, like those from absorption or caries, though without loss of substance. It has three turnings, beginning from the pelvis; the first at the lower vertebræ, it comes forward, then about the sixth vertebra it goes backward, then turns to the right and again forwards, so that the vertebræ colli are almost parallel with the horizon. In this instance the face must have looked downwards; here is an instance of what I have often asserted, and found to exist in the living subject, that is, the projection of the extremities of the spurious ribs over the crista ilii. Mr. Cheselden has given an instance of the same in his osteology. The striking appearance in this distortion, is the
great

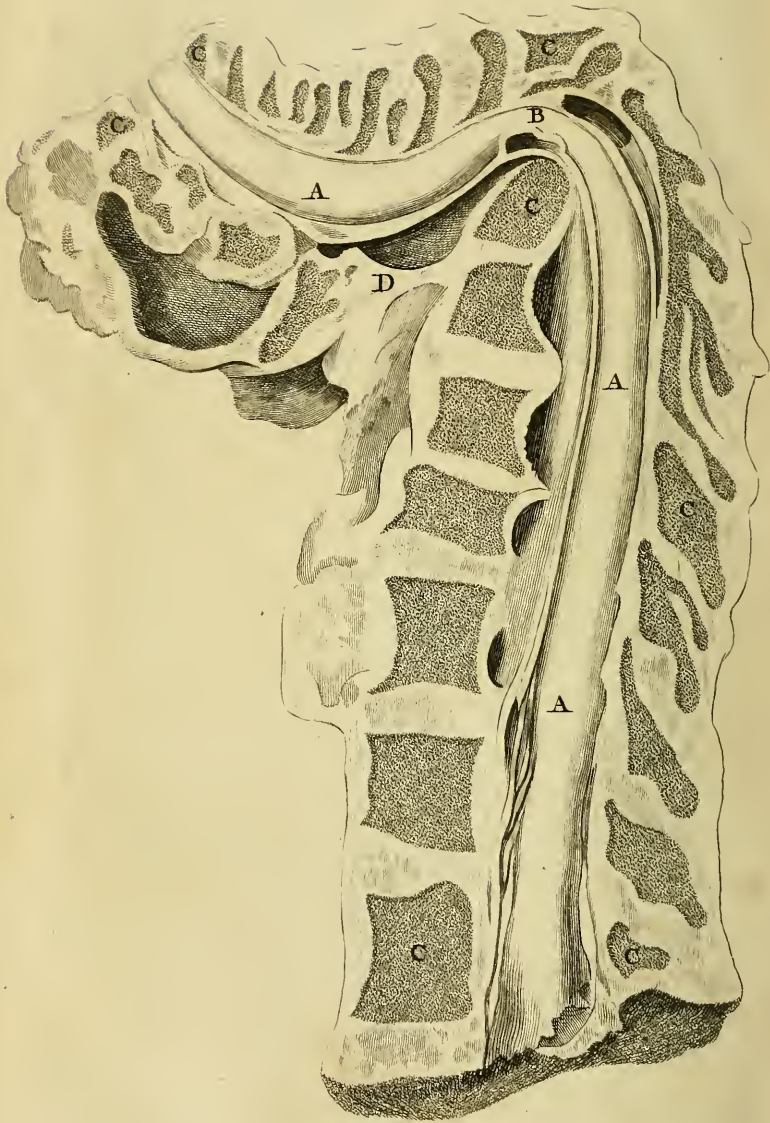
great and immediate projection in the angle of the ribs, which must have elevated the right shoulder nearly to the ear. It is from this projection of the ribs, caused by the distortion of the spine, that we so readily see and discover a person to be crooked; which appearance is owing to the mollities ossium, and easily yielding to the action of the antagonising muscles, acting upon the ends of the ribs every moment of our existence, which bend them where they are most flexible. The ends of the ribs on the left side are strangely crowded on one another. This will produce inaptitude for motion; in such cases consequently the patient is fatigued, and out of breath with very little exercise.

P L A T E III.

THIS is a section of a curved spine with the ribs, &c. drawn from real nature, under the inspection, and in the collection of the museum of the late Dr. Hunter; shewing in a plain view those different degrees of incurvations, from loss of substance by absorption, caries, &c. here is a loss of the bodies of at least six vertebræ; the spine is crooked only in direction forwards and backwards, which is generally the case, where the bodies of those vertebræ are absorbed. In this case the spurious ribs eclipse the ilium; the spinal processes project outward in proportion, as the spine is anchylosed at this place. Where an anchylosis takes place in a curved spine, that cannot be brought straight, here we can only assist. This must be discovered by lifting the child up by the head, keeping the eye on that part of the curved spine, and as that more or less gives way by extending the body, so may we form our judgement of the degrees of success that may attend the means made use of. In these cases there is much more difficulty than in those of the double twist. This anchylosis is another general law in nature; for where the intervening cartilages between two bones in a joint are eroded, earthy matter is deposited by the ex-
halent

halent vessels, whence an union takes place, and a greater degree of strength ; but all motion in this part is lost. A longitudinal section was made of this preparation, in order to shew in one view the state of the spinal canal, and also the general texture of bone, being, as Dr. Hunter affirms, equal in every other circumstance to the best formed spine, in the most healthful subject.

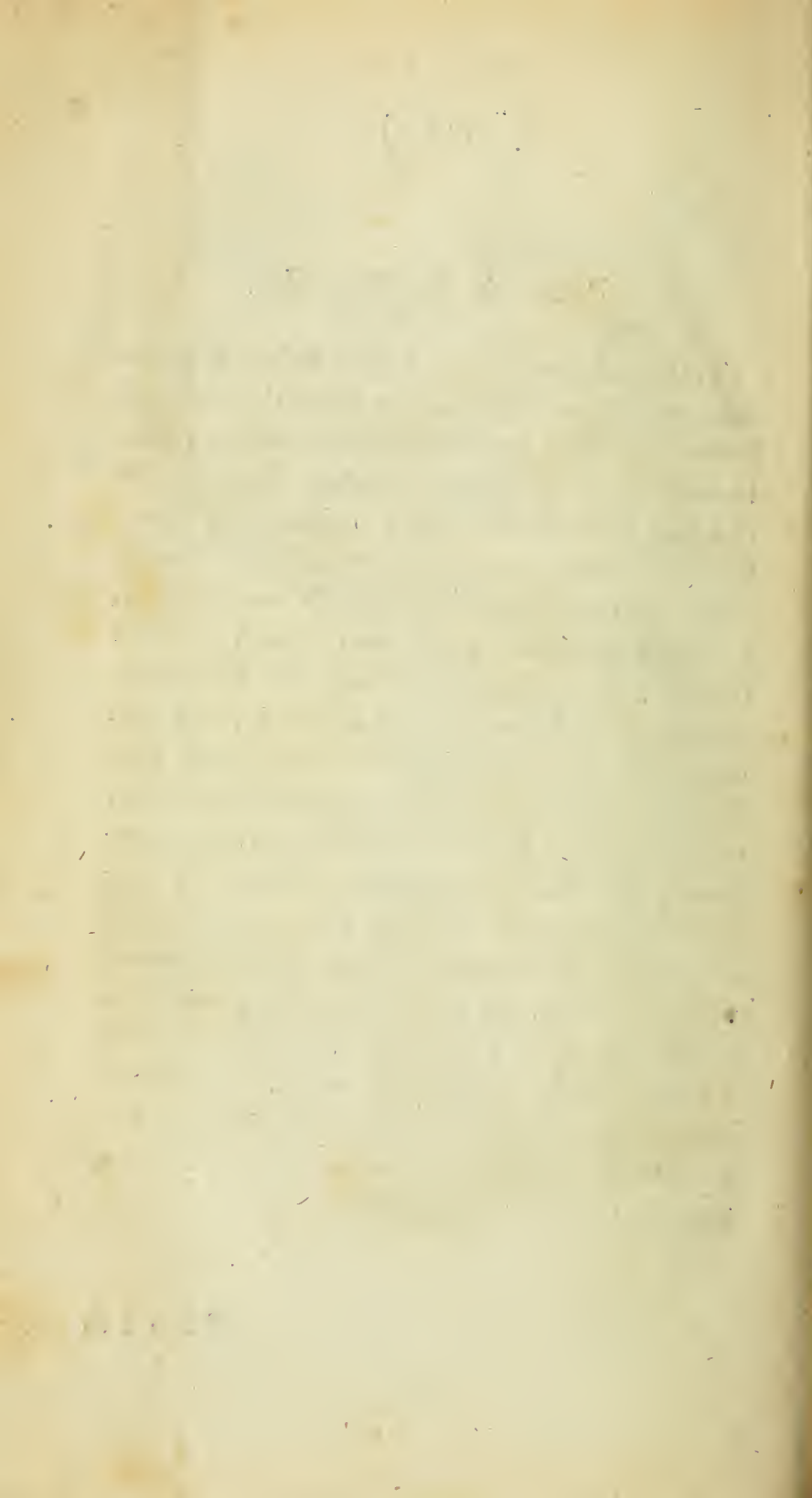
Fig. IV.



Ravenhill Sculp

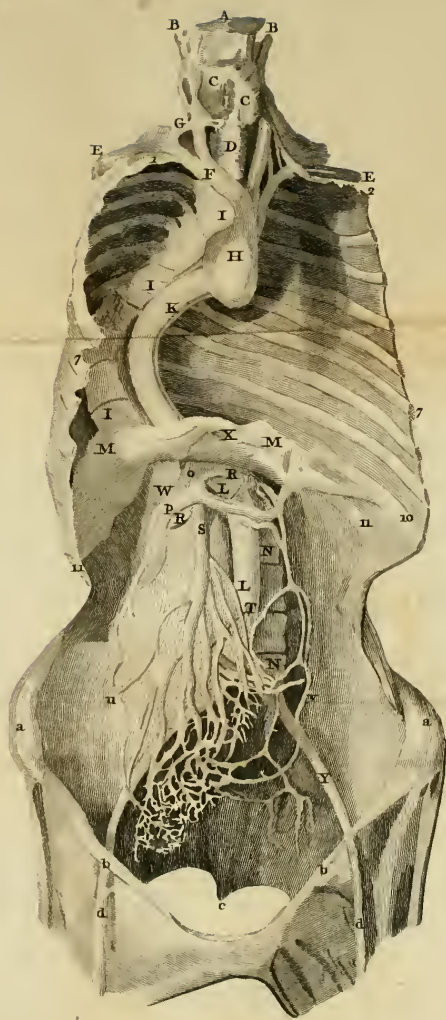
P L A T E IV.

THIS describes a curved spine intire, from the same collection. This section shews the compression of the spinal marrow from incurvation ; here is an instance of loss of substance, from a caries of bone, three or four of the bodies of the vertebra eaten away ; the spine above this fell directly forwards ; the curvature was only in one direction, making a very acute angle, consequently the spinal marrow very much pressed. Dr. Hunter attended this case himself, and watched every circumstance, and what surprised him most was, that no paralysis or the least numbness in the lower extremities took place ; he said, in his lecture, he should have reasoned the other way had he only seen the preparation : a plain proof that a partial compression of the spinal marrow does not impede motion, nor always hinder the ready compliance of the body with the will of the mind. This is a very beautiful preparation in spirits ; it shews where there is a waste or loss of substance in one or more of the vertebrae more or less, so will the medulla spinalis be compressed.



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Fig 5



P L A T E V.

FRONT VIEW.

IN this subject we see many of the causes of bad health arising from the distribution and figure of the parts alone ; and we may safely say, such configuration of parts must unavoidably produce the following symptoms ; oppressed and laborious respiration, impeded circulation, loss of appetite, and general debility. These are the immediate effects of such a structure ; but to describe the number of chronic diseases from this cause, would be an unnecessary repetition of what has been said before in the account of several cases. I shall begin with the thorax or chest. In this subject, though an adult, it is less in capacity than in a child of ten years of age : here we see nature conforming to necessity, and also acquiring all possible advantages ; making as much room for the heart and vital organs as can be conceived ; but the spine is pushed so far to the right, that the lungs there must be reduced, and denied proper motion in respiration, and as it drags the aorta along with it, the circulation to the viscera and lower extremities must necessarily be languid ; the force of the heart weak for want of room, and also from the situation of the aorta, being so very

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much

much out of the straight line ; both which contribute much towards the effect mentioned. Respiration in this case must have been carried on by the lungs on the left side only ; hence must this be joined with weak digestion ; the diaphragm being depressed downwards, to make room for the heart, assists as another impediment to circulation, as does the thorax being straightened by the great twist of the spine ; the abdominal viscera having less room than when the body is erect, makes more pressure upon the blood vessels, particularly in those nearest the insertion of the diaphragm. Every thing we find in this case, here is small ; the ribs, the intercostal spaces, the dorsal vertebræ, &c. as for the contents of the abdomen, it appears that the greatest quantity of the viscera must have lain in the pelvis, for the anterior insertion of the diaphragm came within three ; and the posterior five inches of the spine of the ilium : likewise the points of the true ribs on the right side were within an inch and a half of the ilium ; so that we see the several offices of these viscera must be obstructed in two ways ; first, for want of room ; secondly, from being pushed out of their places : no wonder then that digestion should be impaired, the secretions lessened, and general weakness take place.

P L A T E I.

- A The vertebra dentata.
- B The six remaining vertebræ of the neck.
- C The sternum.
- DD The bodies of the dorsal vertebra.
- E The os sacrum.
- FF The spine of the os ilium.
- G The os ilium.
- HHHH The true ribs.
- II The false or spurious ribs.

P L A T E II.

A Back View of Distorted Spine, from the Collection at St. Thomas's Hospital.

- A Vertebra dentata.
- B B, &c. The bodies of six remaining vertebræ of the neck.
- 3. 6. The spinal processes of the same.
- CCC Spinal processes of the twelve vertebræ of the back.
- DD Spinal processes of the five vertebræ of the loins.
- EEE ————— of the false vertebræ of the os sacrum.
- FF Spine of the os ilium.
- GG Os ilium.
- H The seven true ribs.
- I The five false or spurious.
- LL Os sacrum.
- MM Tuberosity of the os ischium.

P L A T E III.

A Distorted Spine from Caries, a dried Preparation in the Collection of the late Dr. William Hunter's Museum.

- A The second vertebra of the neck, counting from the head.
- B The spinal processes of the vertebræ.
- CC The bodies of the several vertebræ that appear in this view.
- DD The sternum.
- E The clavicle.
- FF The cartilages of the ribs.
- G The vertebræ destroyed by caries.
- H The ribs.
- II Os ilium.
- KKKK Canal for the spina medullaris.
- LLL Foramina through which the spinal nerves pass.
- O The os sacrum.
- P The os coccygis.
- Q The canal for the spinal marrow.

P L A T E IV.

A Section of a Distorted Spine from Caries; a Preparation from Nature, in the Collection of the late Dr. Hunter's Museum.

- AAA The spinal marrow.
- B The spinal marrow compressed from loss of substance.
- CC The spongy or bony substance of the remaining vertebræ.
- D The vertebræ eaten away from caries.

P L A T E V.

A Front View from a Distorted Spine, adult; with the Aorta taking the Curve with the Spine.

- A Pomum Adami.
- BB The external carotid arteries.
- CC The thyroid gland.
- D Trachea arteria.
- EE Arteriæ axillares.
- F The subclavians.
- G Arteriæ vertebrales.
- H Aorta ascendens, the heart removed.
- III The dorsal vertebræ.
- K Aorta descendens superior.
- LL Aorta descendens inferior.
- MM The diaphragm.
- NN The lumbar vertebræ.
- O The cœliac artery.
- P Arteria ventriculi coronaria.
- Q Arteria splenica.
- R The left emulgent artery.
- S The superior mesenteric artery.
- T The inferior mesenteric artery.
- UU Branches from the cœliac artery, anastomosing with the inferior mesenteric.
- W Arteria hepatica.
- X An opening in the diaphragm for the passage of the œsophagus.
- YY Arteriæ iliacæ.
- a a Spine of the os ilium.
- b b Poupart's ligament.
- c Os coccygis.
- d d Arteriæ crurales.
- 1 2 3 4, &c. The ribs on both sides.

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TO
THE PUBLIC.

THE author of the preceding work, having made a variety of experiments relative to the effects produced by dephlogisticated air on the human machine, as far as it relates to the relief of valetudinarians, and the healthful consequence it produces in general, has contrived a method of procuring it in its purest state, throwing into, and filling rooms with this salutary fluid, so that schools, hospitals, studies, or any other larger buildings, may be freed from those noxious materials, with which they are apt to be loaded, from common air being in too great a state of impurity. His thoughts on which subject, he means to publish during the course of next autumn, or at farthest, the succeeding winter.

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